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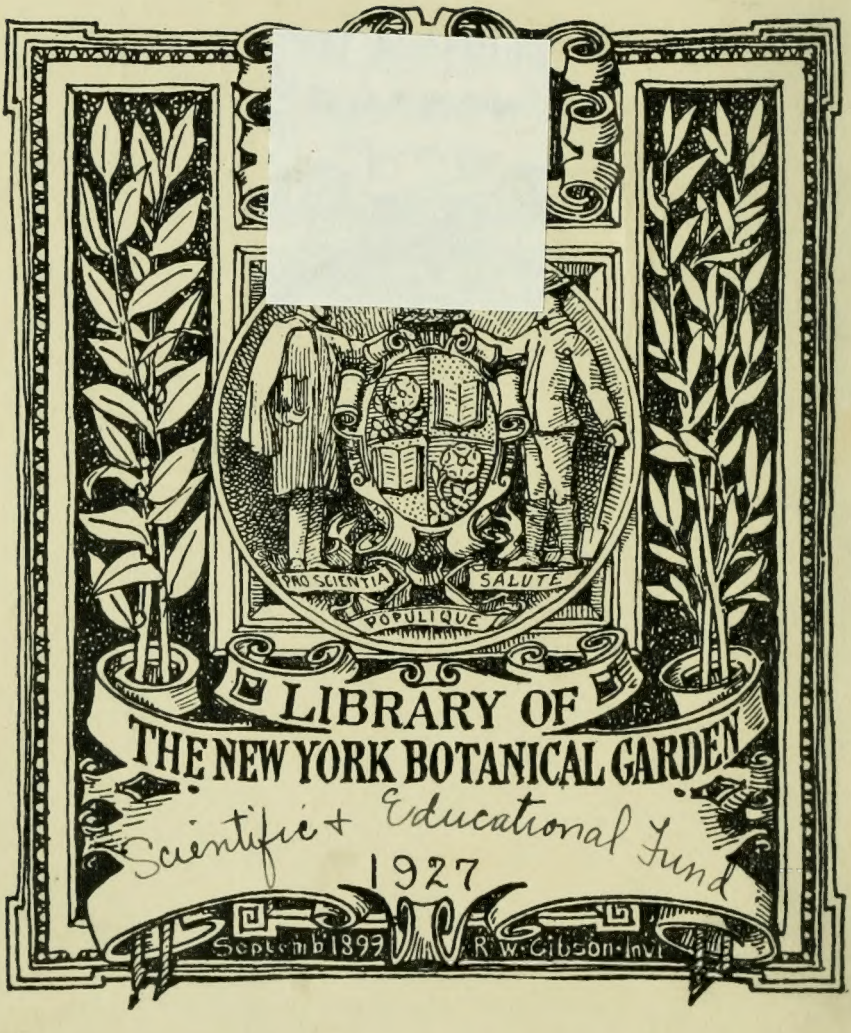
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THE NATURALISED FLORA OF SOUTH AUSTRALIA

THE

NATURALISED FLORA

OF

SOUTH AUSTRALIA

By

J. M. BLACK

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PREFACE.

This is a descriptive and illustrated handbook of the alien plants naturalised in South Australia and propagating themselves spontaneously. Such plants form the greater part of our herbage near towns, and many of them have found their way into the far interior. The list also includes several ornamental plants which have gone astray from gardens or hedges, and all the "noxious weeds" which have been proclaimed as such by the Government. The subject is therefore of some importance, and it is hoped that this little book may be useful and interesting, not only to students of nature, but to country residents who may desire some botanical knowledge about the introduced plants which grow in their fields. No work of this kind has hitherto appeared in South Australia, or, as far as I know, in any part of Australia. The late Professor Tate, in his "Flora of Extra-tropical South Australia" (1890), dealt with only our native plants.

Of the 368 plants here described, the countries of origin are as follow:—Europe generally (usually including Western Asia), 128; Mediterranean region (European and frequently North African Coasts), 92; most parts of the globe (cosmopolitan), 60; South Africa, 44; temperate South America, 15; Asia, 10; temperate North America, 6; Eastern Australia, 6; Western Australia, 1; Mexico, 3; Abyssinia, 1; Canary Islands, 2. It is noticeable that the plants which succeed best in the struggle for life are those which come from lands with climates resembling our own, such as the Mediterranean region, South Africa and temperate South America.

JUN 9 - 1927

The list is the result of several years' observations in various parts of the State, but it is doubtless incomplete. The seeds of new species are accidentally introduced every now and then, or some garden plant finds the soil and climate so congenial that it escapes beyond the fence and perhaps becomes a nuisance to the agriculturist. This often occurs in an outlying district, where the newcomer may remain localised for a long time. On the other hand, some of the immigrants here enumerated may not prove able to maintain themselves.

I wish to express my thanks to Mr. H. H. D. Griffith, who has assisted me indefatigably in the collection of specimens.

All the descriptions and drawings have been made from South Australian specimens. It is hoped that, by means of the figures and the glossary of scientific terms, even those previously unacquainted with botany may be able to follow the descriptions.

In considering the colour of flowers it must be remembered that many are subject to albinism; thus white-flowered forms of Bartsia latifolia *and* Echium plantagineum *have been found in South Australia.*

The etymology of generic names has been given wherever there is a fair degree of certainty on the subject.

Synonyms have been given sparingly, and only where likely to prove useful.

5, Alfred Street, Norwood,
July, 1909.

GLOSSARY OF BOTANICAL TERMS.

Accumbent, the cotyledons of *Cruciferæ* when the radicle is curved against their edges.
Acuminate, tapering suddenly into a point.
Acute, sharp, gradually pointed.
Akene (achene), a dry, indehiscent, 1-seeded fruit.
Alternate, leaves or flowers inserted at different heights along the branches; intervening between (in a series of organs).
Annual, a plant flowering and dying in one year.
Anther, see *stamen*.
Ascending, spreading horizontally and then becoming erect.
Auricle, ear-shaped lobe at the base of a leaf.
Awn, a fine bristle terminating an organ or inserted on its back.
Axil, the angle formed by the leaf and the branch.
Axillary, growing in the axil.
Axis, (1) the common peduncle or stem to which the flowers or the branches of a panicle are attached; (2) the mid-rib or continuation of the petiole carrying the leaflets or segments of a leaf *(rhachis)*; (3) the zigzag stalklet to which the flowers are attached in the spikelets of grasses *(rhachis, rhachilla)*.
Barbs, branching hairs of a plumose bristle.
Beaded (torulose), a surface with alternate swellings and depressions.
Berry, a fleshy fruit with the seeds immersed in the pulp.
Biennial, a plant which flowers and dies in the second year.
Bifid, cut in two for about half its length.
Bipinnate, a leaf whose primary divisions (leaflets) are again pinnate.
Bipinnatifid, a leaf whose primary lobes are again pinnatifid.
Bisexual, a flower with the reproductive organs of both sexes.
Bract, a little leaf at the base of the peduncles and pedicels, and differing from the other leaves in size or shape.
Bracteate, having bracts.
Bracteole, a little bract on the pedicels or even the calyx, and differing in size or shape from the bracts.
Bulb, a short thick rootstock in which the bud or buds are covered by scales.
Calyx, outer envelope of the flower, consisting of free or united sepals.

Campanulate, bellshaped.
Capitate, shaped like a head.
Capsule, a dry fruit usually splitting into pieces called *valves* when ripe.
Carpel, a pistil; used especially to describe the pistils of a compound ovary and the fruits resulting therefrom.
Carpophore, stalklet or axis rising from the receptacle and supporting certain fruits.
Caruncle, a fleshy appendage of the seed, growing near the funicle.
Carunculate, with a caruncle.
Cell, (1) a cavity of the ovary and fruit; (2) a pouch of the anther.
Ciliate, bordered by hairs like eye-lashes.
Claw, narrow lower part of a petal.
Compound, a leaf divided into leaflets; the opposite of *simple*.
Compressed, flattened lengthwise, either from side to side *(laterally)*, or from front to back *(dorsally)*.
Connective, part of the anther which connects the two cells.
Connivent, organs approaching one another at the summit.
Cordate, heartshaped, with the notch below.
Corm, a tuberous, bulblike rootstock, in which the buds are not covered by scales, or by very thin ones.
Corymb, inflorescence where the branches start from different points, but reach about the same height.
Corymbose, arranged in a corymb.
Corolla, inner envelope of the flower, consisting of free or united petals.
Cotyledon, see *embryo*.
Crenate, bordered by blunt or rounded teeth.
Cyme, panicle with usually opposite branches, and in which the central flower opens first.
Decurrent, leaves whose blade is prolonged downwards along the stem in the form of wings.
Denticulate, faintly toothed (diminutive of *dentate*).
Depressed, flattened vertically.
Dichotomous, stem or branches forked once or several times.
Digitate, leaflets or other organs spreading from a common centre like the fingers of a hand.
Dioecious, plant whose male and female flowers are on different individuals.
Disk, glandular organ crowning the receptacle of certain flowers.
Divergent, tending in different directions from a common centre.
Downy (pubescent), beset with short soft hairs.
Drupe, a fleshy indehiscent fruit, in which the outer part of the pericarp is succulent and the inner part consists of a bony *nutlet (stone* or *putamen)*, containing usually 1 seed *(kernel)*.

Embryo, the young plant while still enclosed in the seed, consisting of the *radicle*, or base of the future root, 1 or 2 *cotyledons*, or future seedleaves, and the *plumule*, or future bud.

Entire, not toothed or divided; applied mostly to leaves.

Family, a group of genera which resemble each other.

Filament, see *stamen*.

Filiform, threadlike, very slender.

Follicle, carpel opening only along the inner edge.

Free, not united with any other organ.

Funicle, a little cord by which the ovule is attached to the placenta.

Genus, group of species which resemble each other.

Glabrous, devoid of hairs.

Glaucous, bluish-green, sea-green.

Globular, rounded like a globe.

Glume, bract enclosing the flowers of *Cyperaceæ* and *Gramineæ*.

Hastate, shaped like the head of a halbert; triangular with 2 spreading lobes at the base.

Herb, plant without a woody stem.

Herbaceous, green and more or less succulent.

Incised, deeply and unequally cut into lobes or teeth.

Incumbent, when the radicle in the embryo of *Cruciferæ* is bent over the back of one of the cotyledons.

Indehiscent, a fruit which does not split open at maturity.

Inflorescence, arrangement of the flowers on a plant.

Interrupted, having bare spaces between the parts.

Involucre, a number of bracts surrounding the base of a flowerhead or of an umbel.

Joint, (1) part of an organ, such as the stem, leaf, or fruit, which separates from other parts of the organ, usually at maturity *(article)*; (2) place at which the articles separate *(articulation)*.

Knotted (torose), a cylindrical fruit which is constricted at regular intervals; deeply beaded.

Lamina, the upper expanded part of a petal.

Lanceolate, shaped like the head of a lance; tapering at both ends.

Leaflet, each division of a compound leaf.

Ligule, (1) a small membranous appendage at the summit of the sheath of grass-leaves; (2) the extended and usually strap-shaped limb of the corolla in many *Compositæ*.

Limb, free and usually spreading part of the calyx or corolla.

Linear, long and narrow, with parallel edges.

Lobe, (1) rounded divisions of any organ; (2) broad divisions of a leaf which do not reach the midrib.

Lyrate, a pinnatifid or pinnatisect leaf with a terminal lobe much larger than the lateral ones.

Mealy, covered with a scurfy powder like flour.
Membranous, thin, transparent and flexible, not green.
Midrib, central nerve of a leaf.
Monœcious, a plant which has the male and female flowers on the same individual.
Monopetalous, a corolla whose petals are more or less united.
Mucronate, terminating abruptly in a short, stiff point called a *mucro*.
Node, the swollen part of the stem from which leaves or branches spring; commonly called a "joint."
Obcordate, heartshaped with the notch uppermost.
Oblong, much longer than broad, and rounded at both ends.
Oboval, oval, with the broadest part above the middle.
Opposite, two leaves or other organs rising from the same level on opposite sides of the stem.
Oval (ovate), eggshaped and broadest below the middle.
Ovary, see *pistil*.
Ovoid, eggshaped; applied to solid organs such as fruits.
Ovule, a young seed.
Palmate, leaves with divergent lobes, like the open hand; almost the same as *digitate*.
Palmatifid, palmately divided into lobes or segments.
Panicle, an inflorescence where the axis is divided into branches bearing several flowers.
Papillose, covered with minute protuberances called *papillæ*.
Pappus, ring of hairs or scales which represent the limb of the calyx in many *Compositæ*.
Pedicel, stalklet of a flower, when the peduncle bears 2 or more pedicellate flowers.
Pedicellate, growing on a pedicel.
Peduncle, stalk of a solitary flower, or common stalk of several pedicellate or sessile flowers.
Pedunculate, growing on a peduncle.
Peltate, leaf whose stalk is attached to the under-surface, instead of the edge.
Perennial, a plant living several years.
Perianth, the floral envelope in flowers where the calyx or corolla is wanting, or where the two are indistinguishable.
Pericarp, the walls of the fruit, consisting of the ripened ovary.
Persistant, lasting beyond maturity: the opposite of *deciduous*.
Petal, one of the divisions of the corolla, usually consisting of a blade or *lamina* and a *claw*.
Petaloid, resembling a petal.
Petiole, stalk of a leaf.
Petiolule, stalk of a leaflet.

Pinnate, a compound leaf whose leaflets are arranged on each side of the common petiole or axis. *Even-pinnate*, having an equal number of leaflets. *Odd-pinnate*, having an odd terminal leaflet.

Pinnatifid, leaf cut into lobes about halfway to the midrib.

Pinnatisect, leaf cut into segments nearly or quite to the midrib.

Pistil, central and female organ of the flower, consisting of the *ovary*, which contains one or more ovules, the *style*, which rises from the summit of the ovary, and the *stigma*, a glandular termination of the style. In those cases where the style is absent, the stigma is sessile on the ovary. It is often sticky or papillose and receives the pollen from the anthers.

Placenta, part of the ovary to which the ovules are attached by their funicles.

Plumose, furnished with hairs branching or arranged in 2 rows like the barbs of a feather.

Pod, a sort of capsule forming the fruit of *Leguminosæ* and *Cruciferæ*.

Pollen, see *stamen*.

Polypetalous, a corolla formed of several free petals.

Prickle, a sharp excrescence rising from the bark and detachable without tearing the wood.

Procumbent, spreading along the ground, but not so closely as *prostrate*.

Proliferous, an organ which produces another like itself.

Prostrate, lying flat along the ground.

Raceme, an undivided axis or peduncle bearing pedicellate flowers.

Radical, springing from the root.

Radicle, see *embryo*.

Ray, (1) see second definition of *ligule*; (2) all the ray-flowers in a *Composita* which has tubular flowers in the centre of the head; (3) one of the branches (peduncles) of an umbel.

Receptacle, enlarged summit of the peduncle, bearing a single flower, or, in the *Compositæ*, a dense cluster of flowers.

Recurved (reflexed), curved backwards or downwards.

Rhomboidal, lozenge-shaped.

Rootstock, subterranean part of the stem of herbaceous perennials, producing roots and sometimes stolons.

Runcinate, a pinnatifid leaf with the lobes pointing towards the base.

Scarious, almost the same as *membranous*, but rather stiff.

Seed, a ripened ovule, consisting of two coats, within which is the embryo only (as in *Cruciferæ*), or the embryo with a supply of albumen (as in Wheat), the albumen being intended for the nourishment of the growing embryo.

Segment, division of a leaf or perianth, reaching nearly or quite to the midrib or base, but not separable from the axis, as leaflets are, without tearing.
Sepal, one of the divisions of the calyx.
Sessile, without any stalk.
Simple, leaf not divided into leaflets, although a simple leaf may be entire, toothed or lobed; (of other organs) not lobed, divided or compound.
Sinuate, leaf whose edge consists of shallow, irregular lobes or teeth, with rounded spaces, called *sinuses*, between them.
Spathe, (1) a large bract enclosing the flower-spike *(spadix)* of *Araceæ*; (2) two or more bracts enclosing the flowers of *Iridaceæ*.
Species, a division of the genus, each species possessing characters which distinguish it from other species of the same genus, and bearing two names, the first the generic name, the second the specific one.
Spike, an undivided axis or peduncle bearing sessile flowers.
Spikelet, a small spike of the grass family, bearing one or several flowers.
Spine (thorn), a sharp point proceeding from the stem or other organ, and not detachable without tearing.
Spinule, a small spine.
Stamen, male organ of the flower, consisting of a short or long stalk (sometimes wanting) called the *filament*, which supports the *anther*. The latter is composed of 1 or 2 pouches or *cells*, containing the *pollen*, by means of which the pistil is fertilised.
Stellate hairs, hairs with branches radiating like a star.
Stigma, see *pistil*.
Stipules, 2 small appendages growing at the base of the petiole.
Stolon, a creeping runner or sucker growing at the base of the stem, rooting at intervals and producing new plants.
Striate, marked with parallel, longitudinal lines.
Style, see *pistil*.
Sub, a prefix meaning (1) *slightly, almost*, as in *suberect;* (2) *under, inferior*, as in *subfamily*.
Tomentose, densely covered with short, soft, matted hairs.
Toothed (dentate), notched so as to resemble a row of teeth.
Trichotomous, stem or branches divided into three, once or several times.
Trifid, cut into 3 parts.
Truncate, cut off squarely.
Tuber, a swollen, fleshy root or rootstock.
Tubercle, a small wartlike protuberance.
Tuberculate, covered with tubercles.
Tunic, membranous envelope of a bulb.

Umbel, inflorescence where the divergent branches or rays start from the same point.

Undershrub, small shrub whose herbaceous flowering branches die off in the winter.

Valvate, petals or sepals whose edges, in bud, are contiguous without overlapping.

Valves, pieces formed by the splitting of the pericarp or envelope of certain fruits when ripe, and usually equalling the cells in number.

Variety, subdivision of a species.

Versatile, an anther attached by its back to the point of a filament, so as to swing easily.

Villous, beset with long, soft hairs.

Vitta, linear longitudinal oil vessel in the fruit of some *Umbelliferæ*.

Wheelshaped (rotate), a corolla whose petals or lobes spread horizontally like a wheel or star.

Whorl, a set of organs, proceeding from the same node, and arranged in a circle round the axis.

Whorled (verticillate), arranged in a whorl.

DRYING SPECIMENS, ETC.

Drying specimens. Botanical specimens, whether for transmission through the post or insertion in a herbarium, should be placed between stout blotters (felt-paper is a cheap and excellent material) with a flat board and a few bricks or stones on top, and pressed for one to four weeks, according to the moisture they contain. The blotters must be changed as soon as they are damp, or the specimens will become mouldy. Every specimen must show flowers and leaves, or fruit and leaves. For mounting, demy paper, cut into sheets of 16 x 10½ inches, gives a convenient size.

Pronunciation of scientific (Latin or Latinised) names of plants:—

a *short as in* man *or long as in* far, *according to position, never as in* mate.

e *as in* get *or as* a *in* gate, *never as in* me, *and never silent.*

i *and* y *as* i *in* marine, *never as in* mine, my.

u *as in* full *or* oo *in* fool, *never as in* use, tune *or* up.

æ, œ, *and* au *are diphthongs, approaching* i *in* fire, oy *in* boy, *and* ou *in* house, *but* æ *and* œ *may be pronounced simply as long Latin* e.

c *and* g *always hard, like* k *and* g *in* get.

j *like* y *in* young; s *always sharp as in* base.

ch, ph, th, rh, *were originally* c, p, t, r *post-aspirated (somewhat as in* blockhouse, uphill, boathook), *but may be pronounced as* k, f, th *in* thin *and* r.

The stressed or accented syllable is marked in the index by an acute accent on the vowel.

Authors' names. The names of certain authors, which recur frequently, have been abbreviated as follows:—

All.—C. Allioni.
Benth.—Geo. Bentham.
DC.—A. P. Candolle.
Desf.—R. L. Desfontaines.
Gærtn.—J. Gærtner.
Haw.—A. H. Haworth.
H. B. & K.—Humboldt, Bonpland, and Kunth.
Jacq.—N. J. von Jacquin.
L.—Carl von Linné (Linnæus).
Mill.—P. Miller.
P.B.—Palisot de Beauvois.
Pers.—C. H. Persoon.
R. Br.—Robt. Brown.
Schrad.—H. A. Schrader.
Scop.—J. A. Scopoli.
Sibth.—J. Sibthorpe.
Sm.—J. E. Smith.
Thunb.—C. P. Thunberg.
Willd.—C. L. Willdenow.
With.—W. Withering.

KEY TO THE FAMILIES.

A. Flowers complete, having a calyx and corolla.
  B. Corolla of distinct petals (polypetalous).
    C. Corolla regular (petals similar in size and shape).
      D. Ovary superior, free from and above the base of the calyx.
        E. Ovary or fruit solitary, simple, containing 1 or more cells.
          F. Calyx of 2 sepals.
            Petals 4; ovary quite superior; stamens numerous ... PAPAVERACEÆ 2
            Petals 5; ovary half-superior; stamens few or numerous ... PORTULACACEÆ 3
          F. Calyx of 4-5 sepals or lobes.
            Stamens numerous, united in bundles; petals 5; leaves opposite ... ... HYPERICACEÆ 11
            Stamens few, 2-10.
              Trees or shrubs; leaves pinnate.
                Shrubs; flowers bisexual; petals 4; stamens 4, inside the disk ... ... SAPINDACEÆ 14
                Trees; flowers unisexual; petals 5; stamens 10, outside the disk ... ... ANACARDIACEÆ 15
              Herbs.
                Leaves opposite; sepals and petals 5; stamens 5-10 ... ... CARYOPHYLLACEÆ 7
                Leaves alternate or radical.
                  Leaves of 3 leaflets; petals 5; stamens 10; fruit a 5-celled capsule OXALIDACEÆ 12
                  Leaves not of 3 leaflets; petals 4; stamens usually 6; fruit a pod ... CRUCIFERÆ 4
        E. Ovary or fruit consisting of several distinct carpels.
          Stamens numerous.
            Stamens united in a tube round the style; petals 5 ... ... MALVACEÆ 9
            Stamens free; petals 5.
              Stamens on the receptacle; fruit dry; leaves without stipules ... ... RANUNCULACEÆ 1

Stamens on the calyx; fruit juicy; leaves stipulate ... ... (partly) ROSACEÆ 17

Stamens 10; sepals and petals 5; carpels whorled round a central beaked axis ... ... GERANIACEÆ 10

D. Ovary inferior, adherent to the calyx.

Stamens numerous; petals 5; fruit of 1-3 bony nutlets (partly) ROSACEÆ 17

Stamens few, 5-8; herbs.

Petals and stamens 5; fruit of 2 1-seeded carpels; flowers in an umbel ... ... UMBELLIFERÆ 22

Petals 4; stamens 8; fruit a 4-celled capsule ... ... ONAGRACEÆ 18

C. Corolla irregular (petals dissimilar in size or shape).

Ovary free, solitary, 1-celled.

Corolla pouched at the base.

Sepals 2; petals 4; stamens 6, in 2 bundles ... ... FUMARIACEÆ 3

Sepals, petals and stamens 5 VIOLACEÆ 6

Corolla not pouched.

Petals 5, papilionaceous; stamens 10; fruit a pod ... ... (partly) LEGUMINOSÆ 16

Petals 4-6, deeply cut; stamens 8-25; fruit a capsule open at top ... ... RESEDACEÆ 5

Ovary adherent; fleshy plants; petals numerous.

Leaves minute, growing on the flattened joints or "plates"; style 1; fruit a large berry CACTACEÆ 20

Leaves conspicuous; styles several; fruit a capsule ... ... FICOIDACEÆ 21

B. Corolla of 1 piece, petals united (monopetalous).

H. Ovary superior, free, either within the corolla or at the bottom of the calyx.

I. Stamens 5, united in a tube and bearing 5 appendages on their backs; leaves opposite; fruit a large follicle ... ... ASCLEPIADACEÆ 32

I. Stamens free, inserted on the corolla or united with it.

J. Fruit of 2-4 usually dry carpels, separating at maturity.

K. Carpels 4.

Stamens 5, alternate with the lobes of the usually regular corolla; leaves alternate; stems cylindrical (partly) BORAGINACEÆ 36

Stamens 4, in pairs, rarely 2; corolla irregular, usually 2-lipped; leaves opposite; stems quadrangular.
Fruit of 4 free carpels, like naked seeds at the bottom of the calyx; style rising between them. LABIATÆ 39
Fruit of 4 carpels, at first united in an ovoid capsule, style rising from the top of the carpels ... ... VERBENACEÆ 40
K. Carpels 2.
Corolla 1-lipped; stamens 4 ... SELAGINACEÆ 41
Corolla 5-lobed; stamens 5 ... .., ... (partly) BORAGINACEÆ 36
J. Fruit simple, undivided.
L. Fruit a capsule or drupe.
M. Stamens 2.
Trees or shrubs; corolla regular, 4-lobed; fruit fleshy with few seeds ... OLEACEÆ 30
Herbs; corolla slightly irregular; fruit capsular with numerous seeds ... ... (partly) SCROPHULARIACEÆ 38
M. Stamens 4-5.
N. Stamens 4, in pairs; corolla 2-lipped or with 4-5 unequal lobes ... (partly) SCROPHULARIACEÆ 38
N. Stamens not in pairs; corolla regular or almost regular.
O. Stamens 5, opposite to the corolla lobes; style 1 ... PRIMULACEÆ 29
O. Stamens alternate with the corolla lobes.
P. Leaves opposite or all radical.
Flowers in dense spikes; corolla scarious, 4-lobed; stamens 4; fruit opening transversely ... ... PLANTAGINACEÆ 42
Flowers not in dense spikes; corolla 5 lobed; stamens 5.
Leaves persistant; carpels 2 ... ... APOCYNACEÆ 31
Leaves not persistant; carpel 1 ... ... GENTIANACEÆ 33
P. Leaves alternate or none; corolla lobes and stamens 5.

Twining plants, often leafless and with 2 styles; capsule 4-seeded ... ... CONVOLVULACEÆ 35

Plants not twining; style 1; capsule many-seeded ... ...

Style simple or 2-lobed; capsule 2-celled.

Corolla regular; lobes usually folded in bud ... SOLANACEÆ 37

Corolla somewhat irregular; lobes overlapping in bud; filaments woolly (partly) SCROPHULARIACEÆ 38

Style with 3 stigmatic branches; capsule 3-celled ... ... POLEMONIACEÆ 34

L. Fruit a 1-celled pod; stamens numerous, united in a tube; calyx and corolla 5-lobed; tree ... ... (partly) LEGUMINOSÆ 16

H. Ovary inferior, adherent to the calyx-tube and below the corolla; stamens inserted on the corolla.

Q. Flowers in a head on a common receptacle, surrounded by a calyx-like involucre.

Fruit 1-2-seeded, enclosed in a woody, spiny pericarp; flowers monœcious ... ... (partly) AMBROSIACEÆ 28

Fruit 1-celled, 1-seeded, not enclosed in a woody pericarp.

Stamens 4; anthers free; leaves opposite ... ... DIPSACEÆ 26

Stamens 5; anthers united in a tube; leaves rarely opposite COMPOSITÆ 27

Q. Flowers not clustered in a head on a common receptacle.

R. Leaves opposite or whorled.

Leaves whorled; styles 2; fruit consisting of 2 globular carpels; stems quadrangular ... RUBIACEÆ 24

Leaves opposite.

Stamens 1-3, style 1; fruit capsular; herbs ... ... VALERIANACEÆ 25

Stamens 5; fruit a berry; tree CAPRIFOLIACEÆ 23

R. Leaves alternate; flowers unisexual; stamens 3; fruit fleshy; trailing herbs ... ... CUCURBITACEÆ 19

A. Flowers incomplete, without a distinct calyx and corolla.

S. Herbaceous or woody plants; leaves with branching nerves; perianth usually 4-5-cleft; embryo with 2 cotyledons *(Monochlamydeæ)*.
T. Trees or shrubs; ovary free.
Flowers in diœcious catkins; fruit 2-valved ... ... SALICACEÆ 49
Flowers not in catkins.
Leaves toothed, stipulate.
Flowers appearing after the leaves; calyx 5-lobed; fruit a 3-seeded berry ... ... RHAMNACEÆ 11
Flowers appearing before the leaves; perianth 4-5-toothed; fruit dry, 1-seeded ... ... ULMACEÆ 48
Leaves entire, not stipulate; flowers unisexual; fruit a capsule composed of 3 1-seeded carpels (partly) EUPHORBIACEÆ 46
T. Herbs.
U. Ovary free.
Fruit of 3 1-seeded carpels, not enclosed in the perianth and protruding from the calyx-like involucre ... ... (partly) EUPHORBIACEÆ 46
Fruit 1-celled, 1-seeded, usually indehiscent, enclosed in the persistant perianth.
Leaves stipulate.
Stipules forming a membranous sheath; flowers mostly bisexual; leaves alternate and entire; stamens 5-8 ... ... POLYGONACEÆ 45
Stipules free; leaves opposite, toothed; flowers unisexual; stamens 4-5 ... ... URTICACEÆ 47
Leaves without stipules; perianth segments 3-5; styles 2-3.
Segments herbaceous; fruit indehiscent ... ... CHENOPODIACEÆ 43
Segments scarious; fruit indehiscent or circumscis- ... AMARANTACEÆ 44
U. Ovary adherent to calyx; fruit with 1-2 seeds enclosed in the hardened calyx.
Leaves pinnate or palmate; corolla absent; calyx with 4-8 lobes ... ... (partly) ROSACEÆ 17
Leaves simply lobed; flowers unisexual; calyx absent, corolla 5-toothed ... ... (partly) AMBROSIACEÆ 28
S. Plants almost always herbaceous; leaves usually with parallel nerves; perianth usually of 6 segments in 2 rows: cotyledon 1 *(Monocotyledons)*.
V. Perianth of 6 segments, in 2 rows, all or the inner ones petaloid.

Ovary free, superior to the perianth.
All the segments petaloid; stamens 6; anthers opening inwards; fruit a 3-celled capsule ... ... LILIACEÆ 50
Outer segments green; fruit of several distinct carpels; aquatic plants .. .. ALISMACEÆ 51
Ovary adherent to the tube of the perianth, inferior; capsule 3-celled, with several seeds.
Stamens 3; anthers opening outwards ... ... IRIDACEÆ 52
Stamens 6; anthers opening inwards ... ... AMARYLLIDACEÆ 53
V. Perianth of herbaceous or scarious segments or none; ovary free.
Perianth of 6 scarious segments; stamens 6 or 3; style 1 with 3 filiform stigmas; capsule 3-valved, many-seeded ... ... JUNCACEÆ 54
Perianth inconspicuous or none.
Flowers monœcious, sessile on a fleshy axis *(spadix)*, which is enclosed in a large bract *(spathe)*; leaves broad with branching nerves; fruit a berry or capsule ... ... ARACEÆ 55
Flowers in small, dry spikes, each flower enclosed in small bracts called *glumes*; leaves narrow; fruit dry, 1-celled, 1-seeded.
Stems solid, without nodes; leaf-sheaths not slit downwards; flower in the axil of 1 bract ... CYPERACEÆ 56
Stems hollow and interrupted by nodes; leaf-sheaths slit downwards; flower enclosed in 2 bracts ... ... GRAMINEÆ 57

NATURALISED FLORA OF SOUTH AUSTRALIA.

DIVISION 1.—DICOTYLEDONS.

Embryo with 2 cotyledons; stem herbaceous or woody; leaves with branching nerves.

Class 1.—THALAMIFLORÆ.

Flowers with 2 envelopes (calyx and corolla); petals distinct, inserted, as are also the stamens, upon the receptacle *(thalamus)*, and not upon the calyx; ovary free.

Family 1.—**RANUNCULACEÆ.**

1. Ranunculus. L.

Sepals and petals 5, the petals with a nectar scale at base; stamens numerous; carpels several, distinct, beaked, 1-seeded, arranged in globular or oblong heads. Flowers solitary; leaves alternate; herbs.

Carpels covered with sharp points, and with a stout incurved beak ... ... *R. muricatus* 1
Carpels with blunt protuberances and a short beak ... ... *R. trachycarpus* 2

1. **Ranunculus muricatus,** L. Stout, spreading annual, almost glabrous; leaves circular-cordate, with 3 broad incised lobes, the uppermost leaves narrower; petals yellow, longer than the recurved sepals; receptacle globular; carpels 8-16, large, compressed, with a broad, sharp keel and a broad, curved beak, half the length of the carpel, whose sides are covered with spiny tubercles.

Ranunculus muricatus.

Moist places in settled districts—Flowers Sept.-Oct.—Mediterranean region.

2. **R. trachycarpus,** Fischer and Meyer. Resembles the preceding in habit, but is sprinkled with a few weak hairs; lower leaves either pinnatisect, with 3 distant, oval, incised segments, or palmately 3-lobed as in *R. muricatus;* petals small, yellow, notched, slightly exceeding the spreading sepals; receptacle

conical, hairy; carpels 30-40, small, compressed, with a short beak, the sides covered with small, blunt, wrinkled tubercles.

Swamps at Murray Bridge; reservoir, Bridgewater.—Sept.-Dec.—Western Asia.

Family 2.—**PAPAVERACEÆ.**

Capsule swollen and oblong; stigmas several, radiating ... ... PAPAVER 1
Capsule long, linear, 2-valved.
Stigmas 2, capitate; capsule 2-celled ... GLAUCIUM 2
Stigmas 4, awlshaped; capsule 1-celled ... ESCHSCHOLTZIA

PAPAVER, L.

Petals crumpled in bud; stigmas sessile and radiating from the centre of a disk which crowns the ovary; capsule 1-celled, subdivided into several compartments by as many partitions and opening under the stigmatic disk. Flowers solitary on long peduncles: herbs with a milky juice.

Capsule bristly ... ... *P. hybridum* 1
Capsule glabrous.
Capsule subglobular ... ... *P. Rhœas* 2
Capsule oblong ... ... *P. dubium* 3

1. **Papaver hybridum,** L. *Rough Poppy.* Erect, more or less villous annual; leaves twice or thrice pinnatisect, with linear lanceolate lobes; petals red, usually with a dark purple spot at base; filaments purplish, thickened in the upper part; anthers violet; stigmatic rays 6-8, broad, reaching to the edge of the disk, which is sinuate, but not lobed; capsule ovoid, studded with stiff, curved bristles.

Common in cultivated fields and on roadsides.—Sept.-Nov.—Central and southern Europe; western Asia.

2. **P. Rhœas.** *Field Poppy.* Annual, with stiff spreading hairs; leaves pinnatisect, with linear-lanceolate, sharply toothed segments; flowers large, scarlet; filaments slender; stigmatic rays 8-14, not reaching the edge of the disk, which has overlapping lobes; capsule smooth, obovoid or almost globular.

Papaver hybridum.

Cultivated and waste land.—Sept.-Nov.—Europe; western Asia.

3. **P. dubium,** L. *Long-headed Poppy.* Villous annual, leaves pinnatisect, with broad or narrow, toothed or incised segments; peduncles very long, with appressed hairs, at least in the upper part; flowers large, usually brick-red; filaments slender; anthers purplish; stigmatic rays 5-10; disk slightly lobed, lobes not overlapping; capsule smooth, cylindrical-oblong.

Cultivated and waste land.—Sept.-Nov.—Europe; western Asia.

2. GLAUCIUM, Gærtn.

(From the Latin *glaucus*, glaucous; alluding to the colour of the plants.)

1. **Glaucium flavum,** Crantz (1769). *Horned Poppy.* Biennial, with stiff, erect, branching stems; leaves thick, glaucous, rough with scaly bristles, radical ones pinnatifid, with incised lobes, upper leaves oval, stem clasping, coarsely toothed; flowers large, yellow, solitary on short thick peduncles; capsule very long, linear-cylindrical, with 2 cells separated by a spongy partition, and opening from the top in 2 valves; seeds transversely wrinkled. *G. luteum*, Scop. (1772).

Sea-beach, Port Vincent.—Sept.-Apl.—Central and southern Europe.

Eschscholtzia californica, Chamisso, (Californian Poppy), with glaucous, bipinnatisect leaves and linear lobes, large yellow or orange flowers, sepals forming a hood over the bud, and long ribbed capsule, is an occasional escape from gardens.—Coasts of California and Oregon.

Glaucium flavum.

Family 3.—FUMARIACEÆ.

1. FUMARIA, L.

Flowers irregular, the upper petal pouched. Delicate glabrous herbs, with weak, angular stems.

Flowers rather large; leaf segments broad	*F. officinalis* 1
Flowers very small; leaf segments narrow	*F. parviflora* 2

1. **Fumaria officinalis,** L. *Fumitory.* Luxuriant climbing or spreading annual; leaves twice or thrice pinnatisect, segments oboval, lobed, both segments and lobes

arranged in 3's; flowers white, pink or red 6-12 mm. (under ½ in.) long, in loose racemes; sepals oval about as broad as the corolla, and from ⅓ to ½ as long; bracts usually shorter than the pedicel; ripe fruit globular, often mucronate.

Divided by some botanists into several species. The forms most common here have white or pink flowers, sepals half as long as corolla and pedicels recurved in fruit (*F. capreolata*, L.), or purplish flowers, sepals about one-third as long as corolla, and straight pedicels (*F. muralis*, Sonder).

Cultivated land, and known as *Pinkweed* near Adelaide. May - Oct.—Europe; temperate Asia.

2. **F. parviflora,** Lamarck. *Small-flowered F.* Branching annual; leaves with narrow-linear segments; flowers whitish with green tips, 3-4 mm. (under ¼ in.) long; sepals very small and narrower than pedicels; ripe fruit globular, finely tuberculate, with 2 small pits on top.

Fumaria officinalis.

Cultivated land.—Oct.-Nov.—Warm countries.

Family 4.—CRUCIFERÆ.

Petals 4, in the form of a cross (hence the name of the family); stamens 6, 4 large and 2 shorter, or sometimes wanting; fruit a pod, sometimes long and linear (*silic*), sometimes short and broad (*silicule*) opening from base to summit in 2 valves, which are separated by the thin partition bearing the seeds, or in a few genera the pod does not open. Flowers in simple terminal racemes which lengthen after flowering; leaves alternate or all radical; herbs.

To ascertain the genus to which doubtful specimens belong, it is sometimes necessary to soften the seed in hot water, detach the skin, and examine the embryo to see the relative positions of the cotyledons and radicle.

A. Pod at least 3 times as long as broad, opening by valves.
  B. Stigma 2-lobed; pod subcylindrical ... MATTHIOLA 1
  B. Stigma entire, or slightly notched.
    Seeds in 2 rows in each cell.
      Pod 1-nerved, straight ... ... DIPLOTAXIS 2

Pod without conspicuous nerves, slightly curved ... ... NASTURTIUM 3
Seeds in 1 row in each cell.
Pod quadrangular, 1-nerved ... ... BARBAREA 4
Pod cylindrical, usually 3-nerved.
Pod without beak; seeds oblong ... SISYMBRIUM 5
Pod long-beaked; seeds globular.
Sepals spreading; seeds biting; green plants ... ... SINAPIS 6
Sepals suberect; seeds mild; glaucous plants ... ... BRASSICA
A. Pod not twice as long as broad, opening by valves, compressed laterally, partition narrow, at right angles to the valves.
Cells 1-seeded ... ... LEPIDIUM 7
Cells several-seeded ... ... CAPSELLA 8
A. Pod indehiscent, usually with transverse partitions.
Pod laterally compressed, resembling that of *Lepidium* ... ... SENEBIERA 9
Pod cylindrical or conical.
Pod of 2 superposed 1-seeded joints.
Upper joint with a blunt beak; maritime plant ... ... CAKILE 10
Upper joint with a pointed beak; weed RAPISTRUM 11
Pod with a long beak and several seeds RAPHANUS 12

1. MATTHIOLA, R. Br.

(Named after Matthioli, an Italian botanist of the 16th century.)

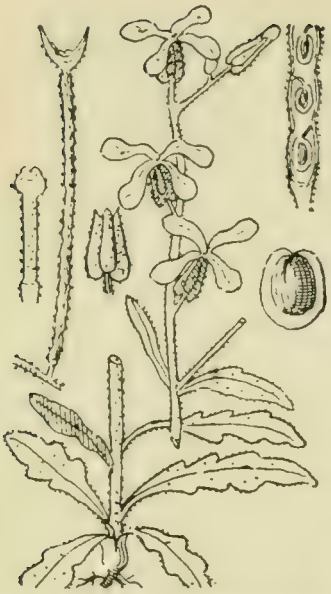
Sepals erect, lateral ones pouched at base; pod long, linear, valves 1-nerved; seeds numerous, compressed, winged, in 1 row; cotyledons accumbent. White-tomentose plants, with stellate hairs.

Pod compressed; leaves entire ... ... *M. incana* 1
Pod cylindrical, 2-horned; leaves pinnatifid *M. bicornis* 2

1. **Matthiola incana,** R. Br. *Autumnal Stock.* Biennial or perennial; stem woody and bare at base; leaves oblong, tapering at base, entire; flowers large, purple; pods erect.

An escape from gardens on sandhills near Brighton.—Aug.-Nov. Mediterranean region and sea-coasts of western Europe.

2. **M. bicornis,** DC. *Two-horned Stock.* Annual or biennial, with long taproot; lower leaves pinnatifid with a long terminal lobe, the upper ones linear, entire or toothed; flowers large, violet, opening and fragrant at night; pod cylindrical, beaded, slender, spreading, terminating in 2 horns.



Matthiola bicornis.

An escape in cultivated land near Gladstone, where it is known as *Pinkie*.—All the year.—Eastern Mediterranean region.

2. Diplotaxis, DC.

(Greek *diplos*, double, *taxis*, row; seeds arranged in 2 rows in each cell.)

Sepals equal at base; pod linear, compressed, valves 1-nerved, beak short, conical; seeds numerous, ovoid-compressed, in 2 rows; cotyledons incumbent and folded over the radicle.

Stem leafy in lower half ... ... *D. tenuifolia*
Stem leafy only at base *D. muralis* 2

1. **Diplotaxis tenuifolia,** DC. *Wall Rocket.* Glabrous perennial; stem woody at base, erect, leafy; lower leaves pinnatifid with linear lobes, the upper ones narrow, entire or toothed; sepals spreading; petals yellow; fruiting pedicels spreading, usually about half as long as the pod, but sometimes nearly as long. *Brassica tenuifolia*, Boissier.

Port Lincoln; Murray Bridge (J. H. Maiden).—Most of the year.—Europe; western Asia, usually growing there on old walls and ruins.

2. **D. muralis,** DC. *Sand Rocket.* Almost glabrous annual or biennial; stems slender, ascending, almost leafless; leaves mostly in a radical rosette, pinnatifid or sinuate-toothed, smelling unpleasantly when crushed; sepals erect; petals yellow; fruiting pedicels about one-third as long as the pods, which are smaller than in the preceding. *Brassica muralis*, Boissier.

Roadsides and cultivated land.—All the year.—Europe.

Diplotaxis muralis.

3. Nasturtium, R. Br.

(From the Latin *nasus tortus*, twisted nose; alluding to the biting taste of cress.)

1. **Nasturtium officinale,** R. Br. *Water Cress.* Per-

ennial, with biting taste; stem creeping, thick, hollow, branching; leaves pinnatisect, the terminal lobe usually larger and rounded, but sometimes all oblong; sepals equal at base; petals white; pod short, cylindrical-compressed, spreading, rather longer than the pedicels, valves convex, without prominent nerves; seeds ovoid, net-veined under the lens, in 2 rows; cotyledons accumbent.

Along creeks in moist districts. —Sept.-Apl.—Europe; temperate Asia.

Nasturtium officinale.

4. Barbarea, Beckmann.

(From the old botanical name of *B. vulgaris*, "Herb of St. Barbara.")

1. **Barbarea præcox,** R. Br. *Early Winter Cress.*

Barbarea præcox.

Stout edible biennial with erect angular stems; radical leaves lyrate, the upper ones pinnatifid, with linear lateral lobes, auricled and stem-clasping; flowers large, yellow; sepals erect; pods numerous, linear, stiff, subquadrangular, almost erect on short pedicels about as thick as the pod; valves prominently 1-nerved; seeds numerous, tuberculate; cotyledons accumbent.

Near market gardens, Bridgewater. — Sept.-Dec. — Western Europe.

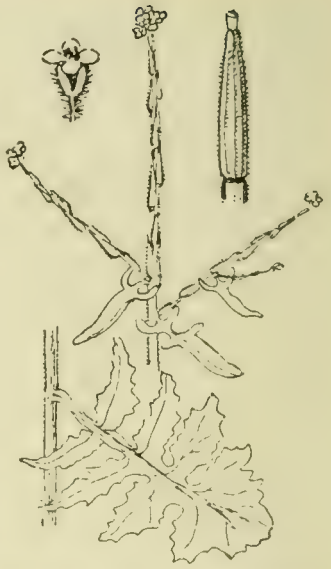
5. Sisymbrium, L.

Sepals erect, equal at base; pods linear, nearly cylindrical; seeds small, numerous, in 1 row; cotyledons incumbent, but not folded together.

Pods short, appressed to stem ... ... *S. officinale* 1
Pods long, spreading ... ... *S. orientale* 2

1. **Sisymbrium officinale,** L. *Hedge Mustard.* Erect, downy annual; branches rigid, spreading horizontally; leaves stalked, the lower ones runcinate, the upper hastate; flowers small, pale-yellow; pods short, awl-shaped, almost sessile, appressed, valves 3-nerved; seeds light-brown, obliquely truncate.

Roadsides and cultivated land. —Sept.-Dec.—Europe; western Asia.



Sisymbrium officinale.

2. **S. orientale,** L. *Oriental Rocket.* Erect, villous annual or biennial; leaves stalked, lyrate or runcinate, the middle ones with a terminal lobe, which is very long and hastate, all the lobes with small, spreading or erect auricles on the lower side of the base; the uppermost leaves lanceolate, entire; flowers small, pale-yellow, sometimes exceeded by the young pods below them; pods long, very slender, curved, on short pedicels almost as thick as the pod, ascending or spreading, valves 3-nerved; seeds oblong. *S. Columnæ,* Jacq.

Sisymbrium orientale.

Roadsides and waste places.—July-Nov.—Central and southern Europe.

6. Sinapis, L.

(From *sinapi,* the Greek name for mustard.)

Sepals spreading, equal at base; pod subcylindrical with a conical beak; seeds in 1 row, with a biting flavour; flowers yellow; cotyledons of *Diplotaxis.*

Beak shorter than pod ... ... *S. arvensis* 1
Beak longer than pod ... ... *S. alba* 2

1. **Sinapis arvensis,** L. *Charlock, Wild Mustard.* Dull-green, rough-villous annual; stem erect with

stiff, spreading branches; lower leaves lyrate, the upper ones sessile, oval to lanceolate, sinuate-toothed; flowers bright-yellow; fruiting pedicels thick, much shorter than the pods; pods almost erect, beaded, hairy or glabrous, valves prominently 3-nerved; beak stout, conical, nearly as long as the valves; seeds 3-11, globular, smooth, reddish-brown, the beak usually containing one. *Brassica Sinapistrum*, Boissier.

Sinapis arvensis.

Cultivated land.—Aug.-Dec.—Europe; western Asia.

2. **S. alba,** L. *White Mustard.* Rough-villous annual; leaves all stalked and lyrate; fruiting pedicels spreading, as long as the 3-nerved pods, which are spreading, beaded, covered with soft, white hairs; beak flattened, curved, longer than the valves; seeds 4-6, usually 1 in the beak. *Brassica alba*, Boissier.

Cultivated as fodder, and spontaneous in places.—Aug.-Nov.—Europe; western Asia.

Brassica oleracea, L. (Cabbage), with thick, glabrous, glaucous leaves, the upper ones sessile, but not auricled; *B. Rapa*, L. (Turnip), with green, rough-hairy radical leaves and glaucous upper leaves, clasping the stem with auricles; and *B. Napus*, L. (Rape), with similar upper leaves and all leaves glaucous and glabrous, are sometimes spontaneous in or near cultivated land. All have yellow flowers, cylindrical pods with a beak much shorter than the valves, and the cotyledons of *Diplotaxis*.—Europe.

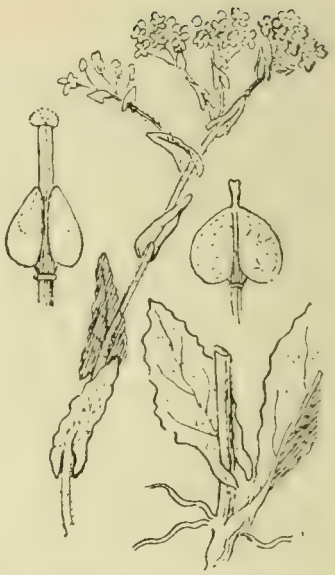
7. Lepidium, L.

(Diminutive of the Greek *lepis*, a scale; alluding to the shape of the pod.)

1. **Lepidium Draba,** L. *Hoary Cress.* Whitish-downy perennial; stems stiff, branching above; leaves oblong, sinuate-toothed, the lower ones stalked, the upper ones stem-clasping and auricled; flowers white, numerous, in a flat-topped panicle; fruiting pedicels 2-4 times as long as the pods, which are cordate, broader than long, glabrous; style persistant and conspicuous; seeds 1 in each cell; cotyledons incumbent.

Roadsides in moist places.—Sept. - Oct.—Europe; western Asia.

L. ruderale, L. (Narrow-leaved Cress), found in all temperate climates and native to South Australia, often appears in crops in the northern areas, growing as high as the wheat. It has long racemes of oval pods, notched at the summit.



Lepidium Draba.

8. Capsella, Medikus.

(Diminutive from Latin *capsa*, a box; alluding to the shape of the pod.)

1. **Capsella Bursa-pastoris,** Mœnch. *Shepherd's Purse.* Downy annual, with tapering root; radical leaves in a rosette, toothed, pinnatifid or almost entire, upper leaves clasping the erect stem with short auricles; flowers small, white; fruiting raceme long and loose, with spreading pedicels longer than the pods, which are triangular - compressed, truncate and notched at top; style very short; seeds 10-15 in each cell; cotyledons incumbent.

Capsella Bursa-pastoris.

Waste places.—Aug.-Oct.—In all countries outside the tropics.

9. Senebiera, Poiret.

(After Senebier, a botanist of Geneva.)

Pod almost circular, compressed, wrinkled, with 2 indehiscent 1-seeded cells; cotyledons incumbent. Flowers white, in short racemes, opposite the leaves.

Fruiting racemes long; pod slightly wrinkled *S. pinnatifida* 1
Fruiting racemes short; pod coarsely wrinkled *S. Coronopus* 2

1. **Senebiera pinnatifida,** DC. (1799). *Lesser Swine-cress.* Ill-smelling annual, with prostrate or ascending, villous stems; leaves pinnatisect, with entire or in-

cised segments; petals shorter than sepals, sometimes none; fruiting raceme longer than the leaf, with slender, spreading pedicels longer than the pod, which is only 2 mm. ($\frac{1}{12}$ in.) broad, notched at summit and base, and consists of 2 ovoid, 1-seeded valves or nutlets, wrinkled and separating when ripe. *S. didyma.* Pers. (1807).

Waste places.—Sept.-Jan.—Temperate South America; naturalised in Europe.

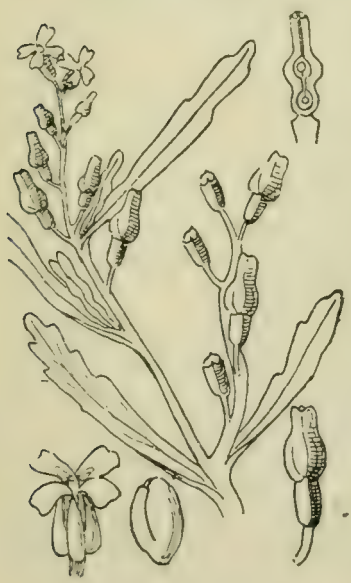
2. **S. Coronopus,** Poiret. Glabrous, light-green, prostrate annual; leaves resembling those of the preceding; petals longer than sepals; fruiting raceme shorter than the leaf, with thick, very short pedicels; pod 4 mm. broad, notched at base and rounded at summit, deeply wrinkled; valves usually remaining united when ripe.

Roadsides, Mount Gambier.—Oct.-Feb. — Almost cosmopolitan.

Senebiera pinnatifida.

10. CAKILE, Adanson.

(From *qâqulleh*, the Arabic name of the plant.)



Cakile maritima.

1. **Cakile maritima,** Scop. *Sea Rocket.* Maritime glabrous annual, with procumbent branches from near the base; leaves fleshy, oblanceolate, entire or with a few distant blunt teeth; flowers pink, rather large; sepals erect, 2 lateral ones pouched at base; fruiting pedicels thick, as long as the lower joint of the pod, which is hard, indehiscent, and consists of 2 joints, the upper one mitre-shaped, deciduous, with 1 erect seed, the lower one oblong, persistant, with 2 small teeth on the truncate summit, and 1 hanging seed, or sometimes sterile; both joints 3-nerved on each side; cotyledons accumbent.

Sea-coast near Adelaide and on Kangaroo Island. Accepted by some botanists as native, but not

recorded in Australia until 1869, when it was found on the shores of Port Phillip Bay and French Island.—Nov.-Apl.—Sea-coast of Europe and western Asia.

11. Rapistrum, Desvaux.

(Diminutive of *rapa; Brassica Rapa* is Turnip.)

1. **Rapistrum rugosum,** All. Downy or almost glabrous, erect annual, often over 1 m. (3 ft.) high; branches stiff, erect or spreading horizontally; lower leaves lyrate, the upper ones sessile, lanceolate, coarsely toothed; flowers pale-yellow; sepals erect, lateral ones pouched at base; fruiting racemes long, narrow, the pedicels appressed or spreading slightly, about as long as the lower joint of the fruit; pod tough, downy, of 2 indehiscent joints, the upper one globular, wrinkled lengthwise, with 1 erect seed, the lower joint cylindrical, with one hanging seed, or sterile; beak awl-shaped, as long as, or slightly longer than, the upper joint; cotyledons of *Diplotaxis.*

Wheatfields; sometimes called *Giant Mustard* or *Turnip-weed* by farmers.—Oct.-Dec.—Central and southern Europe.

Rapistrum rugosum.

12. Raphanus, L.

Sepals erect, the lateral ones pouched at base; pod long, cylindrical, indehiscent, filled with a spongy tissue between the globular seeds, and terminating in a long, conical beak; cotyledons of *Diplotaxis.*

Pod jointed, strongly nerved ... ... *R. Raphanistrum* 1
Pod not jointed, swollen, smooth ... ... *R. sativus* 2

1. **Raphanus Raphanistrum,** L. *Wild Radish, White Charlock.* Annual or biennial, almost glabrous, branching, with a tough, slender taproot; lower leaves lyrate, the middle ones oblong, coarsely toothed, the uppermost narrow and often entire; petals white, with violet veins, or sometimes yellow; pods suberect, knotted between the seeds, with raised longitudinal nerves and separating into joints when ripe.

Cultivated land near Adelaide. Oct.-Dec.—Almost all temperate countries.

2. **R. sativus,** L. *Radish.* Root annual or biennial, swollen and fleshy; leaves like those of the preceding; flowers white or pink; pods thick and swollen, smooth or faintly grooved when ripe, somewhat beaded and tapering into a long thick beak.

Subspontaneous near market gardens.—Oct.-Dec.—Not found anywhere in an aboriginally wild state, and perhaps a form of the preceding species, modified by long cultivation.

Family 5.—RESEDACEÆ.

1. RESEDA, L.

1. **Reseda alba,** L. *White Mignonette.* Erect, glabrous, robust annual or biennial; leaves pinnatisect, with unequal, linear, wavy segments; flowers white, in long dense racemes; sepals 5, rarely 6; petals as many, 3-cleft; stamens 10-20, inserted on a fleshy disk; capsule erect, oblong, with 4, or sometimes 3, small teeth.

Raphanus Raphanistrum.

A roadside weed near Kingscote, Kangaroo Island (J. H. Maiden).—Oct.-Jan.—Mediterranean region.

Family 6.—VIOLACEÆ.

Viola odorata (Sweet Violet), a well-known garden plant, is spreading spontaneously in Long Gully, National Park, Belair.

Family 7. CARYOPHYLLACEÆ.

Sepals persistant, usually 5, free or united in a tubular calyx; petals usually 5, alternate with the sepals, and often with 2 scales at the base of the lamina, forming a sort of crown; stamens usually 10, sometimes 5; styles 2-5, stigmatic all the way; fruit a 1-celled capsule, opening by 3-10 teeth or valves; seeds small, numerous, attached to a free central column (placenta). Herbs, with opposite, entire leaves springing from the swollen nodes.

Sepals united in a toothed calyx.
  Styles 3-5.
    Styles 3; capsule 6-toothed ... ... SILENE 1
    Styles 5; capsule 5-toothed ... ... LYCHNIS
  Styles 2; capsule 4-toothed ... ... SAPONARIA 2
Sepals free.
  Leaves stipulate.

Styles 5; capsule 5-valved ... ... SPERGULA 3
Styles 3; capsule 3-valved ... ... SPERGULARIA
Leaves without stipules.
Petals bifid.
Styles 5; capsule 10-toothed ... ... CERASTIUM 4
Styles 3; capsule 6-toothed ... ... STELLARIA 5
Petals entire; styles 3; capsule 6-toothed ARENARIA 6

1. SILENE, L.

Calyx inflated, many-nerved ... ... *S. Cucubalus* 1
Calyx not inflated, 10-nerved.
Annuals.
Fruiting calyx oblong ... ... *S. nocturna* 2
Fruiting calyx ovoid ... ... *S. gallica* 3
Perennial; dwarf; calyx clubshaped ... ... *S. Schafta* 4

1. **Silene Cucubalus,** Wibel (1799). *Bladder Campion.* Glabrous, glaucous perennial; leaves lanceolate, lower ones tapering at base; flowers white, drooping, in forked cymes; calyx bladdery, subglobular, 20-nerved, net-veined, with broad triangular teeth; petals cut almost to the claw into 2 lobes, with 2 wings or scales at the throat; capsule enclosed in the calyx, ovoid, twice as long as the carpophore. *S. inflata,* Sm. (1800).

An escape from gardens: roadsides, Mount Lofty Range; Mount Gambier.—Sept.-Dec.—Europe; western Asia.

2. **S. nocturna,** L. Erect, glandular-hairy annual; lower leaves oblong-spoonshaped, upper ones lanceolate, sessile, ciliate with long hairs near the base; flowers pink, almost erect, in 1-sided racemes; fruiting calyx oblong, with 10 branching nerves and short lanceolate teeth; petals narrow, deeply bifid, scales small; filaments glabrous; capsule oblong, about 6 times as long as the carpophore.

Waste places or pasture.—Sept.-Nov.—Mediterranean region.

3. **S. gallica,** L. *French Catchfly.*—Glandular-villous annual, often very sticky; stems erect or ascending, purplish; lower leaves oblong-spoonshaped, upper ones linear-lanceolate; flowers in almost 1-sided racemes; fruiting calyx ovoid, contracted at top, very hairy, 10-nerved, with awlshaped teeth; petals usually entire, pink, white, or with a dark-red blotch on each lamina (*S. quinquevulnera,* L.); filaments hairy in the lower half; capsule ovoid, with very short carpophore.

Silene gallica.

Pasture and cultivated land.—Aug.-Dec.—Europe: western Asia; naturalised in most countries.

4. **S. Schafta,** Gmelin. Dwarf, glandular-downy perennial; stems short, ascending; leaves oboval, acuminate; flowers rather large, pink, erect, terminal, with 1 or 2 lateral: calyx long, clubshaped, 10-nerved; petals entire, with 2 blunt scales; carpophore very long.

Sandy patches, Seaview Road, Port Victor.—Aug.-Oct. —Western Asia.

Lychnis Githago, Scop. (Corn Cockle), a cornfield weed in most parts of the world and in the eastern States of Australia, probably exists here also, but I have seen no specimens. It is a tall, silky-villous annual, with long, narrow leaves and showy red flowers, the green, linear calyx-lobes being longer than the petals. –Europe and western Asia.

2. Saponaria, L.

(From the Latin *sapo*, soap; alluding to the soapy juice of *S. officinalis*, L.)

1. **Saponaria Vaccaria,** L. *Soapwort.* Glabrous, glaucous annual: stem stout, erect, branching above; leaves sessile, oblong-oval to oblong-lanceolate; flowers pink, long-stalked, in a loose corymbose panicle, calyx ovoid, contracted at top, with 5 green, winged angles and pink triangular teeth; lamina of petals notched, without scales; capsule ovoid, with short teeth and a very short carpophore.

Crops; called *Nancy* in the northern agricultural areas.—Dec.-Feb.—Central and southern Europe.

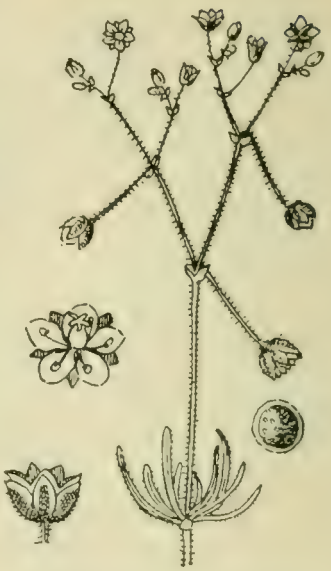
Saponaria Vaccaria.

3. Spergula, L.

1. **Spergula arvensis,** L. *Corn Spurry.* Glandular-downy or almost glabrous annual, branching from the base into erect stems; leaves linear, unequal, grooved beneath, in 2 opposite clusters and apparently whorled; stipules broad; flowers white, in irregular cymes; fruiting pedicels bent downwards; petals entire, shorter than sepals; capsule ovoid a little longer than the calyx; seeds with a narrow border.

Cultivated land, Bridgewater. —Sept.-Dec.—Almost cosmopolitan.

Spergularia rubra, Pers., Sand Spurry, with short pedicels, capsule equalling calyx and tuberculate seeds, is a common roadside weed. *S. media*, Pers., with long pedicels, capsule exceeding calyx, and winged seeds, is usually found near the sea-coast. Both have linear leaves, are almost world-wide in their distribution, and are considered indigenous to Australia. They are very variable plants, and probably many of our specimens are introduced.



Spergula arvensis.

4. Cerastium, L.

(From the Greek *keras*, a horn; alluding to the shape of the capsule.)

1. **Cerastium vulgatum,** L. *Mouse-ear Chickweed.* Annual or sometimes biennial; downy with spreading, simple, or glandular hairs; stems erect or ascending; radical leaves small, stalked, stem-leaves sessile, oval to oblong; flowers white in forked cymes; petals notched, about as long as the sepals, sometimes wanting; capsule cylindrical, exceeding the calyx more or less; styles sometimes 3 or 4, in which case the teeth of the capsule are 6 or 8.

Cerastium vulgatum.

Of this little weed Bentham says (*Brit. Fl.*, 71):—"Its protean forms have much puzzled the botanists of many countries to distinguish them into from 2 or 3 to 20 or 30 supposed species." The most common form near Adelaide is covered with spreading hairs; leaves broad-oval, blunt; flowers in compact cymes; petals ciliate at base, equalling or slightly exceeding the sepals; pedicels shorter than sepals; capsule straight, nearly twice as long as the calyx (*C. glomeratum*, Thuillier).

Pasture and cultivated land.—July.-Jan.—Almost cosmopolitan.

5. STELLARIA, L.

(From the Latin *stella*, a star; alluding to the radiating petals.)

1. **Stellaria media,** Cyrillo. *Chickweed.* Weak annual; stems branching, ascending, with a line of white hairs on one side leading down from the junction of the leaves and alternating at each node; leaves oval-acuminate, the lower ones with hairy petioles, the upper ones sessile; flowers small, white, on long downy pedicels, in loose, leafy cymes; petals deeply 2-cleft, shorter than sepals; stamens 3-5; capsule a little longer than calyx.

Usually in moist places.—July-Dec.—Almost cosmopolitan.

Stellaria media.

6. ARENARIA, L.

(From the Latin *arena*, sand.)

1. **Arenaria serpyllifolia,** L. *Thyme-leaved Sandwort.* Small, slender, downy annual; leaves sessile, oval-acute, spreading; flowers white in forked, leafy cymes; pedicels slender, about twice as long as the calyx; petals entire, shorter than sepals; styles 3, sometimes 4; capsule ovoid; seeds finely tuberculate.

Arenaria serpyllifolia.

Sandhills near Glenelg and Brighton.—Sept. - Nov.—Almost cosmopolitan.

Family 8.—PORTULACACEÆ.

1. PORTULACA, L.

1. **Portulaca oleracea,** L. *Purslane.* Succulent prostrate annual; leaves oboval-oblong, thick, shining; flowers small, yellow, sessile, axillary; sepals 2, keeled, closing over the fruit, but finally deciduous; petals 4-6; stamens 10-12; style-branches 4-6; ovary adherent at base;

capsule opening by a lid and containing numerous black seeds.

A native of our dry interior, as well as of other warm countries; a common weed of cultivation near Adelaide, and in such localities probably introduced from abroad. — Dec.-March.

Portulaca oleracea.

Family 9.—**MALVACEÆ.**

Calyx persistant, 5-lobed, usually with 3 or more bracts at base; petals 5, twisted in bud, cohering at base; stamens numerous, united by the filaments in a tube surrounding the ovary; anthers 1-celled; styles united in the lower part, with stigmas equalling the carpels in number; ovary many-celled; fruit usually composed of several free carpels. Leaves stalked, alternate, palmately veined and stipulate.

Carpels 1-seeded; stigmas decurrent along style-branches.
- Calycine bracts distinct ... ... MALVA 1
- Calycine bracts united at base ... ... LAVATERA

Carpels 2-seeded; stigmas terminal ... ... MODIOLA 2

1. MALVA, L.

Involucre of 3 separate bracts attached to the calyx; carpels in a depressed ring round a central axis.

Bracts oval; corolla twice as long as calyx *M. nicæensis* 1
Bracts linear; corolla scarcely exceeding calyx *M. parviflora* 2

1. **Malva nicæensis,** All. *Mallow of Nice.* Annual with soft spreading hairs seated on tubercles: stems stout or ascending; leaves almost circular in outline, with 5-7 rounded, crenate, more or less deeply-cut lobes; flowers small, light-purple, in axillary clusters on unequal pedicels; bracts oval, attached halfway up the calyx; calyx-lobes broad-oval, ciliate, almost concealing the ripe carpels; petals twice as long as calyx, notched, ciliate on the claws; carpels 8-10, glabrous or slightly downy, wrinkled and netted on the back, the sides almost smooth and radially lined.

Roadsides and waste places.—Aug.-Nov.—Mediterranean region.

2. **M. parviflora,** L. *Small-flowered Mallow.* Annual, almost glabrous, except for the downy petioles; stem with spreading branches; leaves like the preceding, but more deeply cordate; flowers small, pink or almost white, in axillary clusters; bracts linear, rising from the base of the calyx: calyx-lobes broad, ciliate, enlarged and spreading outwards in fruit; petals scarcely longer than calyx, with glabrous claws; carpels 8-12, glabrous or downy, sharply wrinkled on back and toothed on the edges, so that the fruit has prickly ridges between the carpels.

Malva parviflora.

Roadsides and waste places.—Apl. - Nov.—Mediterranean region.

These two species are much alike and are both commonly called *Marsh Mallow* in South Australia—a misnomer, as the true Marsh Mallow is a large-flowered European plant belonging to another genus of *Malvaceæ (Althæa officinalis*, L.).

Two biennial *Lavateras*, with flowers in axillary clusters and mallow-like leaves, have established themselves more or less. *L. arborea*, L. (Tree Mallow), is tall, with a somewhat woody base, purple flowers, broad spreading bracts longer than the calyx, and wrinkled carpels with raised edges. *L. cretica*, L., is a smaller plant, with pale lilac flowers, oval bracts shorter than the calyx, whose lobes are abruptly acuminate, carpels almost smooth, rounded across the back and with blunt edges.—Sept.-Oct.—Mediterranean region.

2. Modiola, Mœnch.

(From the Latin *modiolus*, the nave of a wheel; alluding to the shape of the fruit.)

1. **Modiola multifida,** Mœnch. Perennial, thinly beset with stellate hairs; stems ascending, rooting at the nodes; leaves circular, cut into 5-7 crenate lobes; flowers small, red, solitary, on long axillary peduncles; bracts 3, lanceolate, attached to the peduncle just below the calyx, which is villous, with triangular lobes: petals slightly exceeding calyx, ciliate on the claw; ovary densely villous; carpels about 20, opening by a slit in the upper half, grooved, villous and 2 awned on the back, glabrous and transversely wrinkled below, divided by an incomplete partition into 2 spurious cells placed one above the other and each containing 1 seed. *M. caroliniana*, G. Don.

Willunga; Myponga; Mount Gambier. — Nov.-Feb. — Temperate South America.

Modiola multifida.

Family 10.–

GERANIACEÆ.

Calyx persistant, of 5 distinct sepals, enlarged in fruit; petals 5, alternate with 5 nectar-glands; stamens 10, free, in 2 rows, the 5 outer ones shorter and often sterile; ovary of 5 carpels, whorled round a central axis and produced upwards in a beak consisting of the united styles and awns of the carpels; the beak lengthens after flowering, and at maturity the carpels, with their awns, separate elastically from the persistant central axis; carpels 1-seeded, opening along the inner face; leaves stipulate.

Petals equal.
- Fertile stamens 10; awns glabrous inside — GERANIUM 1
- Fertile stamens 5; awns hairy inside ... — ERODIUM 2

Petals unequal; calyx spurred ... ... — PELARGONIUM 3

1. GERANIUM, L.

(From the Greek *geranos*, a crane: the fruit resembles a crane's head and bill.)

Geranium molle.

1. **Geranium molle,** L. *Dove's-foot Geranium.* Slender annual covered with soft, spreading hairs; stems prostrate or ascending; leaves circular, the lower ones long-stalked, palmately divided to about the middle into 5-7 oboval, incised lobes, upper leaves more deeply cut; peduncles usually shorter than the petioles, bearing 2 flowers on long slender pedicels; petals reddish-purple, deeply notched, exceeding the calyx, ciliate at base; anthers blue, filaments widened below, glabrous; beak short; carpels wrinkled trans-

versely, and curling upwards on the elastic awn when ripe.

Moist places: Adelaide; Mount Lofty Range; Mount Gambier.—Sept.-Jan.—Europe; western Asia.

2. Erodium, L'Héritier.

(From the Greek *erôdios*, heron; resemblance of the fruit to a heron's bill.)

Two outer sepals 5-nerved, 3 inner ones 3-nerved, with broad scarious edges; 5 outer stamens scalelike, without anthers, filaments dilated in lower part; carpels obconical, villous; awns with long silky hairs on the inner side, separating upwards from the axis and twisting spirally.

Leaves pinnatifid ... ... *E. Botrys* 1
Leaves pinnatisect (segments free).
Segments with toothed lobes ... ... *E. moschatum* 2
Segments deeply pinnatifid ... ... *E. cicutarium* 3

1. **Erodium Botrys,** Bertoloni. Annual, with prostrate or ascending stems beset with long, white, recurved hairs; leaves oval-oblong, the radical ones long-stalked, pinnatifid with coarsely toothed lobes, the upper ones with narrow, incised lobes; stipules oval-ciliate; peduncles erect, glandular-hairy, longer than the leaf, bearing an umbel of 1-4 flowers; petals erect, purplish, with 3 dark veins, half as long again as the calyx; filaments toothed or not; beak 7-10 cm. (2½-4 in.) long.

Erodium Botrys.

Common in pasture.—Aug.-Oct.—Mediterranean region.

2. **E. moschatum,** L'Héritier. *Musk Erodium.* Annual or biennial, more or less glandular-hairy, smelling slightly of musk; stems stout, prostrate or ascending; leaves long, pinnatisect, the segments distant, oval, sometimes minutely stalked, coarsely toothed or lobed; stipules oval, conspicuous; flowers pale-purple, 1-9 in umbels on long peduncles which are sometimes radical; petals rather longer than calyx and ciliate on the claw; filaments of fertile stamens 2-toothed near the base; beak 3-4 cm. (about 1½ in.) long.

Erodium moschatum.

Roadsides, pasture and cultivated land.—July - Nov.—Central and southern Europe; western Asia.

3. **E. cicutarium,** L'Héritier. *Common Erodium.* Smaller plant than the preceding, the leaves pinnatisect, with oblong pinnatifid lobes; flowers pink or purplish, 2-8 in umbels on erect, radical, or axillary peduncles: petals rather unequal, spreading; longer than the calyx, ciliate on the claw; filaments not toothed; beak 2-4 cm. ($\frac{3}{4}$-1$\frac{1}{2}$ in.) long.

Pasture, cultivated land, sandy soil near sea. This and the preceding are often called "Wild Geranium." Var. *maculatum*, Black, a dwarf form with white petals, two of which are red-spotted, is found in the Mount Lofty Range. Aug.-Oct. -Almost all temperate countries.

3. Pelargonium, L'Héritier.

(From the Greek *pelargos*, a stork; alluding to the beak of the fruit.)

1. **Pelargonium graveolens,** Aiton. *Rose Geranium.* Rough-villous, much-branched, lemon-scented perennial with shrubby stem; leaves semicircular in outline, stalked, deeply palmatifid, with 5-7 oblong pinnatifid lobes, with recurved edges; stipules oval-acuminate, cordate at base; umbels 4-12-flowered, on long peduncles; calyx with a short tube or spur running down the pedicel; petals pink, nearly twice as long as calyx, the 2 upper ones larger and streaked with crimson; stamens 10, of which 7 are fertile, filaments united in a tube at base; beak short, awns bearded inside.

Pasture: Happy Valley; Port Victor. — Aug. - Dec. — South Africa.

Pelargonium graveolens.

Family 11.—**HYPERICACEÆ.**

1. HYPERICUM, L.

1. **Hypericum perforatum,** L. *St. John's Wort.* Glabrous perennial, with erect stems marked by 2 opposite longitudinal lines; leaves opposite sessile, oblong, blunt, with transparent dots; flowers bright-yellow, in a broad panicle; sepals 5, black-dotted near the top; petals twice as long as the calyx, oblique, with black dots along the edges; anthers with a dark spot on the back; styles 3, rarely 2; capsule ovoid, twice as long as the calyx, 3-celled; seeds numerous.

Roadsides and pasture: Belair, Blackwood.—Nov.-Jan.—Europe; western Asia.

Hypericum perforatum.

Family 12.—**OXALIDACEÆ.**

1. OXALIS, L.

(Greek *oxys*, sharp or sour; taste of the leaves.)

Sepals and petals 5, the latter partially united towards base; stamens 10, united at base, 5 inner ones longer; styles 5; capsule with 5 many-seeded cells.

Flowers umbelled; leaflets notched ... ... *O. cernua* 1
Flowers solitary; leaflets entire ... ... *O. variabilis* 2

Oxalis cernua.

1. **Oxalis cernua,** Thunb. *Soursob.* Stemless, almost glabrous perennial; rootstock fleshy, tapering, producing bulblets and spindle-shaped tubers; bulb ovoid, with smooth brown tunic; leaves all radical, longstalked, of 3 obcordate leaflets, the lateral ones with unequal lobes; flowers large, yellow, drooping, in umbels of 3-16, on radical peduncles longer than the leaves; sepals lanceolate, downy, with 2 small orange-colored swellings at the tip; petals connected at base, 3 times as long as calyx; the 5 long stamens toothed.

Introduced as an ornamental plant in early colonial days, and now very common.—June-Oct.—South Africa.

2. **O. variabilis,** Jacq. More or less downy, stemless;

bulb blackish, ovoid: leaves all radical, stalked, leaflets nearly circular, ciliate, dotted, sometimes purplish below, the middle one largest and wedgeshaped at base; flowers large, solitary, on peduncles as long as or rather longer than the leaves, and with 2 small bracts below the middle: petals pink to purple in upper part, yellow in lower part (var. *rubra*, Jacq.), 4 times as long as the lanceolate sepals, connected at base; long stamens toothed.

Pasture, Mount Lofty Range. June-Oct.—South Africa.

Family 13.—**RHAMNACEÆ.**

1. Rhamnus, L.

1. **Rhamnus Alaternus,** L. *Buckthorn.* Glabrous shrub, with spreading, thornless branches; leaves persistant, leathery, alternate, oval-acute, with a horny edge and short teeth; stipules small, deciduous; flowers diœcious, greenish, in axillary racemes on short pedicels with a bracteole at base; calyx with 5 deciduous lobes; petals none: fruit a small black berry-like drupe, globular or ovoid, containing 3 bony, 1-seeded nutlets; seed with an open furrow on the back.

A favourite hedge-plant, gone wild on Black Hill, and near the sea.—Fl. Aug.-Sept.; fr. Dec.-Jan. Mediterranean region.

Rhamnus Alaternus.

Family 14.—**SAPINDACEÆ.**

1. Melianthus, L.

(Greek *meli*, honey, and *anthos*, flower; the blossoms are sought by bees.)

1. **Melianthus comosus,** Vahl. Small, downy shrub: leaves alternate, odd-pinnate, leaflets 9-11, oblong-lanceolate, deeply and regularly toothed, green with minute stellate hairs above, grey-tomentose beneath, axis winged between the leaflets; stipules long, awlshaped, free; flowers drooping, in spreading racemes; bracts oval-acuminate, longer than the pedicel; calyx greenish and pink, conspicuously pouched at base, the 2 upper segments broad-oval with a dark-red spot at the base inside, the other 3 segments lanceolate, shorter; petals 4, with red, oblanceolate laminas and hairy linear claws, which are connected at the summit by a woolly growth; stamens 4, in pairs; ovary downy, 4-celled, 4-lobed; fruit a globular, membranous,

stellate-downy, netveined capsule, 25-30 mm. (1-1¼ in.) long, opening at the summit by the inner edges, valves 4, rounded at top and compressed so as to make the capsule appear 4-winged; seeds black, shining, usually 1 in each cell.

Near Cape Jervis; Waterfall Gully.—Sept.-Nov.—South Africa.

M. major, L., a tall glabrous shrub, also from South Africa, with larger leaflets, flowers in a dense, erect raceme, stipules united, and capsule-valves acute at the summit, is grown in gardens, but does not appear to have gone wild.

Melianthus comosus.

Family 15.—ANACARDIACEÆ.

1. SCHINUS, L.

Schinus Molle.

1. **Schinus Molle,** L. *Pepper-tree.* A large aromatic, evergreen tree with drooping branchlets; leaves alternate, pinnate, of 3-17 linear-lanceolate sessile leaflets, alternate or rarely opposite; flowers small, white, diœcious, in long, bracteate, drooping panicles; calyx 5-lobed, exceeded by the 5 oval petals; stamens 10, inserted outside a ring-shaped, 10-toothed disk; styles 3, short; fruit a depressed-globular, red drupe, the size of a peppercorn, and containing a bony nutlet.

All the South Australian specimens seem to belong to the var. *Areira*, DC., with entire leaflets, but seedlings and shoots from polled trees show the toothed leaves of the type.

Cultivated all over the State, and often spontaneous from seed.

—Most of the year.—South America, where it is commonly known by its Indian name of *Aguaribay*. "It secretes a peculiar resin of strong and agreeable odour, which is known in Europe by the name of *American mastic*, and is employed as a purgative. The bark and leaves are used as a remedy for ulcers and wounds, and the leaves yield a yellow dye." —Arechavaleta, *Fl. Uruguaya*, 295.

Class 2.—CALYCIFLORÆ.

Flowers with 2 floral envelopes (calyx and corolla); petals distinct, inserted, as are also the stamens, upon the calyx, which is sometimes free and sometimes adherent to the ovary.

Family 16.—**LEGUMINOSÆ.**

Subfamily 1.—Papilionaceæ.

Flowers irregular; calyx of 5 divisions and often 2-lipped; corolla supposed to resemble a butterfly *(papilio)*, consisting of 5 unequal petals, the upper one *(standard)* the largest and placed outside the others in bud, the two lateral ones *(wings)* equal, and the 2 lower ones usually united by the outer edge in a *keel;* stamens 10, either all united in a tube round the ovary, or 9 united in a tube split on the inner side and 1 free, or all free (in some Australian genera); style and stigma 1; fruit a pod *(legúmen)* with 1 cell and 2 valves.

A. Leaves simple or of 3 leaflets.
  B. Stamens all united in a tube; shrubs.
    Calyx with 1 or 2 lips slit to the base; leaves simple.
      Calyx 2-lipped; pod short ... ... Ulex 1
      Calyx 1-lipped; pod long ... ... Spartium 2
    Calyx with 2 lips not slit to the base; leaves simple or of 3 leaflets ... ... Cytisus 3
  B. Stamens 9 united, 1 free; leaflets 3: herbs.
    Stipules leaflike, free; pod usually long Lotus
    Stipules not leafy, adherent to petiole.
      Pod enclosed in the calyx; flowers usually in heads ... ... Trifolium 4
      Pod exceeding the calyx; flowers usually in racemes or umbels.
        Flowers in long racemes; pod short, straight, 1-2-seeded ... ... Melilotus 5
        Flowers in short racemes or umbels; pod spirally twisted, with several seeds ... ... Medicago 6
A. Leaves pinnate or digitate; style curved upwards.
  C. Leaves even-pinnate, ending in a tendril; stamens united or upper one free.

Stipules smaller than leaflets.
Style bearded on the outer side, or downy all round ... ... VICIA 7
Style flattened from front to back, downy on the inner side ... ... LATHYRUS 8
Stipules larger than leaflets, toothed near base; style compressed laterally at summit, bearded on the inner edge ... ... PISUM
C. Leaves digitate; stamens united ... ... LUPINUS 9

Subfamily 2.—CÆSALPINIEÆ.

Flowers slightly irregular; sepals and petals 5, the upper petal placed inside the others in bud.

Stamens 10, all free ... ... CÆSALPINIA

Subfamily 3.—MIMOSEÆ.

Flowers regular; sepals and petals 4-5; stamens usually numerous.

Stamens united in a tube .. .. ALBIZZIA 9

1. ULEX, L.

1. **Ulex europæus,** L. *Furze.* Erect, villous shrub, with many rigid, dark-green, ribbed branches, the short ones ending in stiff spines; leaves small, stiff, linear-lanceolate, channeled above, ending in a short spine; flowers fragrant, bright-yellow, usually solitary, on short axillary peduncles; calyx villous with brown, spreading hairs, the upper lip with 2 small teeth, the lower with 3; pod swollen, oblong, densely villous, black when ripe, a little longer than the calyx, with 2-6 caruncle seeds.

Planted as a hedge, and spontaneous in many places.—Most of the year.—Sandy and stony places in western Europe.

Ulex europæus.

2. SPARTIUM, L.

1. **Spartium junceum,** L. *Spanish Broom.* Tall shrub, with slender, cylindrical, rushlike branches, green, finely striate and glabrous; leaves few, oblong-lanceolate, entire, glabrous above, appressed-downy below; flowers

large, yellow, scented, in long, loose, terminal racemes; calyx scarious, split to the base on the upper side, so as to form one lip with 5 small teeth; bracts and bracteoles very deciduous; keel with a curved beak; pod long, compressed, linear, black, and almost glabrous when ripe, with 12-18 seeds.

Roadsides: Grange; Coromandel Valley; Waterfall Gully.—Oct. - Dec.—Mediterranean region; naturalised in California and South America. Called *Genêt d'Espagne* in France and *Retama de olor* in Spain.

Spartium junceum.

3. Cytisus, L.

Upper lip of calyx 2-toothed or 2-lobed, lower lip 3-toothed; pod longer than the calyx, compressed; seeds carunculate.

Flowers in loose, leafy racemes.
- Style coiled into a circle; flowers yellow — *C. scoparius* 1
- Style merely incurved; flowers white ... — *C. albus* 2

Flowers in terminal racemes or umbels.
- Flowers yellow, on short pedicels, in compact, headlike racemes.
  - Calyx short, campanulate ... ... — *C. canariensis* 3
  - Calyx long, tubular ... ... — *C. linifolius* 4
- Flowers white, on long pedicels, in loose umbels ... ... — *C. proliferus* 5

1. **Cytisus scoparius,** Link. *Common Broom.* Erect shrub, with long dark-green, wiry, angular branches, often almost leafless; lower leaves broadly stalked, leaflets silky-downy below; upper leaves sessile, oval, simple; flowers large, yellow, usually solitary in the axil, forming leafy racemes; calyx glabrous, teeth very small; style long, curved into a circle, enlarged under the stigma; pod 4-5 cm. (1½-2 in.) long, oblong, very flat, black when ripe, long-haired on the edges, containing 6-15 shining seeds.

Gullies and creeks, Mount Lofty Range.—Aug.-Nov.—Europe.

2. **C. albus,** Link. *White Broom.* Slender undershrub; branches grooved; leaflets 1-3, small, lanceolate, clustered, with incurved edges, covered with a grey-silky down; flowers white, in axillary clusters of 2-4; calyx downy, scarious in the upper part, teeth very small; bracteoles minute; pod 2-3 cm. (about 1 in.) long, flat, linear-oblong, downy with appressed hairs, edges thickened, bearing 1-5 seeds.

Roadsides, Belair. Sept.-Nov. Spain, North Africa.

3. **C. canariensis,** Steudel. *Canary Broom.* Erect, downy, and villous undershrub; branches grooved; leaves on short petioles and leaflets on short petiolules; flowers yellow, solitary, axillary, usually towards the ends of short branchlets, but the terminal flowers appear as a dense raceme or head owing to the abortion of their leaves; calyx downy, teeth conspicuous; bracteoles linear; pod 20-25 mm. (¾-1 in.) long, linear-oblong, villous, with 4-6 seeds.

Cytisus canariensis.

Roadsides and gullies, Mount Lofty Range, even penetrating into the scrub.—Aug.-Feb.—Canary Islands.

4. **C. linifolius,** Lamarck. Erect undershrub; branches stiff, grooved, white-downy; leaves rather large, sessile, tough, with recurved edges, silky-downy below; flowers yellow, 3-8 in dense terminal racemes, leafy at base, calyx tubular, silky, with divergent lips, the upper one divided almost to the base into 2 lanceolate teeth, the upper one trifid; bracteoles linear, attached at base of calyx; pod 15-20 mm. (¾ in.) long, linear-oblong, villous, containing 2-4 seeds.

Waterfall Gully.—July-Nov.—Spain; North Africa.

5. **C. proliferus,** L. *Tagosaste.* Shrub or small tree, with long, slender, drooping, white-downy branchlets; leaves on short broad petioles, leaflets lanceolate, green and glabrous above, downy below; flowers white, on long downy pedicels in umbel-like clusters of 3-8, mostly at the ends of short lateral branches; calyx tubular, downy, with 2 long, linear bracteoles attached below its base; pod downy, several-seeded.

Grown as a hedge, and recommended as a fodder plant; spontaneous in places.—July-Oct.—Canary Islands.

Lotus Tetragonolobus, L. (Winged Pea), a softly villous annual, with solitary or twin flowers of a rich purple, and a long, quadrangular, 4-winged pod, is a garden escape in places in the Mount Lofty Range.—Mediterranean region. *L. corniculatus*, L. (Bird's-foot Trefoil), has appeared near Murray Bridge in a very villous form, suggesting its introduction from Europe, as the forms of this species considered native to Australia are glabrous or almost so. It has 3-10 yellow flowers in umbels on very long peduncles; pods linear-cylindrical, not winged; perennial.

4. Trifolium, L.

(Latin prefix *tri*, three, and *folium*, a leaf.)

Petals narrow, persistant after withering, usually united together and attached to the staminal tube by their claws; pod very small, enclosed in the persistant calyx or corolla, usually indehiscent, with few seeds; flowers small, in heads; leaves of 3 leaflets; stipules united to the petiole by their base.

Flowers yellow; pod 1-seeded, on a short carpophore.
  Flowers 30-50 in dense ovoid heads; standard furrowed ... ... *T. procumbens* 1
  Flowers fewer, in loose globular heads; standard scarcely furrowed.
    Flowers 5-15 in head; pedicels shorter than calyx-tube ... ... *T. dubium* 2
    Flowers 2-8 in head; pedicels longer than calyx-tube ... ... *T. filiforme* 3
Flowers pink or white.
  Calyx inflated after flowering; pod 1-seeded, sessile.
    Creeping perennial ... ... *T. fragiferum* 4
    Small annual ... ... *T. tomentosum* 5
  Calyx not inflated.
    Calyx and whole plant glabrous; pod 2-4-seeded.
      Perennial; heads pedunculate ... ... *T. repens* 6
      Annual; heads sessile ... ... *T. glomeratum* 7
    Calyx hairy or ciliate on teeth; pod 1-seeded.
      Flowers few in head; fruiting peduncles recurved ... ... *T. subterraneum* 8
      Flowers numerous in head; peduncles not recurved.
        Perennial; heads very large.
          Calyx-tube subglabrous, throat villous ... ... *T. medium* 9
          Calyx-tube villous, throat glabrous *T. pratense* 10
        Annuals.
          Heads sessile; calyx hairy, with suberect teeth ... ... *T. striatum* 11
          Heads pedunculate.
            Corolla shorter than the plumose calyx-teeth ... ... *T. arvense* 12
            Corolla equalling or exceeding calyx.
              Leaflets oboval ... ... *T. incarnatum* 13
              Leaflets linear ... ... *T. angustifolium* 14

1. **Trifolium procumbens,** L. *Hop Clover.* Glabrous or downy annual, with a simple erect stem, or with branches ascending from near the base; leaflets oboval, wedgeshaped at base, denticulate, the middle one on a much longer petiolule than the lateral ones; stipules ob-

liquely triangular, ciliate, shorter than the petiole; flowers golden-yellow, usually about 50, in a dense ovoid head on a peduncle shorter or as long as the leaf; calyx-teeth unequal; standard broad-oboval, becoming brown, furrowed, and turned down like a spoon over the divergent wings and pod. *T. campestre*, Schreber.

Owing to a difference between the named specimens in the Linnæan herbarium and the description in the *Species plantarum*, some botanists have considered this to be *T. agrarium*, L., which is, however, a somewhat different species with sessile leaflets.

Pasture.—Sept.-Nov.—Europe; western Asia.

Trifolium procumbens.

2. **T. dubium,** Sibth. (1794). *Lesser Clover.* A more slender plant than the preceding, to which it is closely allied; stipule of upper leaves about as long as petiole; heads smaller and looser, with 5-15 flowers; peduncles much longer than the leaf; pedicels shorter than calyx-tube; standard pale-yellow, only faintly striated in fruiting; wings not divergent. *T. minus*, Relhan (1802).

Pasture and gullies.—Sept.-Jan.—Europe.

3. **T. filiforme,** L. *Slender Clover.* Still more slender and procumbent than the preceding; petiolules almost equal; stipules of upper leaves longer than petiole; flowers 2-8, distinct in small loose heads; peduncles filiform, much longer than leaf; pedicels as long as, or longer than, calyx-tube.

Moist spots, Mylor, Bridgewater. Oct.-Dec.—Western and southern Europe.

4. **T. fragiferum,** L. *Strawberry Clover.* Perennial, with the creeping stems, foliage and long peduncles of *T. repens;* flowers pink, almost sessile, in dense globular heads; bracteoles large, united in an involucre equalling the calyxes; calyx villous, 2-lipped, the upper lip inflated after flowering into a netveined, membranous bladder, its 2 sharp teeth protruding over those of the lower lip; the fruiting head, composed of these calyxes, resembles a strawberry.

Pasture, Mount Lofty Range.—Dec.-May.—Europe; western Asia.

5. **T. tomentosum,** L. *Woolly Clover.* Procumbent annual, usually small, glabrous except the calyx;

leaflets oboval, finely nerved, denticulate; flowers very small, pink, almost sessile, in heads which become dense, globular and tomentose; peduncles axillary, shorter than the leaf; calyx resembling and undergoing the same changes as the preceding, but the upper lip is swollen into a globular shape, and the 2 teeth are hidden among the cottony down which covers it.

Roadsides, pasture.—Sept.-Nov.—Mediterranean region.

6. **T. repens,** L. *White Clover.* Glabrous perennial with prostrate, rooting stems; leaves long-stalked, with broad-oval, denticulate leaflets, often with a white horse-shoe in the centre; stipules lanceolate, long-pointed; flowers white, tinged with pink, pedicellate, recurved after flowering, numerous in a globular head on axillary peduncles usually longer than the leaf; calyx-teeth unequal; standard twice as long as calyx; pod protruding from the calyx, 3-4-seeded.

Generally accepted as the national emblem of Ireland, although the original Shamrock was probably *Oxalis acetosella*, L. (Wood Sorrel). A garden form has leaflets with dark-purple centre.

Pasture.—Oct.-Apl.—Europe; Asia.

7. **T. glomeratum,** L. *Clustered Clover.* Glabrous, prostrate annual; leaflets oboval, denticulate; stipules broadly triangular, long-pointed; flowers small, pink, numerous, sessile, in distant, globular, axillary, sessile heads; calyx conspicuously 10-nerved, teeth equal, oval acuminate, stiff and recurved in fruit; standard longer than the calyx; pod enclosed, 1-2-seeded.

Pasture.—Oct. - Dec.—Western and southern Europe.

8. **T. subterraneum,** L. *Subterranean Clover.* Slender, prostrate, softly villous annual; leaves long-stalked, obcordate, faintly denticulate at summit; stipules oval-acute; flowers pinkish, fertile ones usually 3 together, becoming recurved on the axillary peduncles, which turn downwards towards the ground after flowering, the fertile flowers having their bases surrounded by several rigid, 5-toothed barren calyxes, which begin to grow only after the flowering is over; fertile calyx with a cylindrical glabrous

Trifolium.

tube, red in the upper part, teeth equal, awlshaped, ciliate, as long as the tube; standard twice as long as calyx.

Pasture, Mount Lofty Range. Oct.-Dec.—Central and southern Europe.

9. **T. medium,** L. *Mammoth Clover.* Somewhat villous perennial, with ascending stems; leaves all stalked, the uppermost opposite, leaflets oblong, almost entire; stipules large, veined, acuminate; flowers purplish, in large, showy, subglobular, terminal heads on downy peduncles; calyx-tube 10-nerved, almost glabrous outside, with a ring of long hairs in the open throat, teeth awlshaped, ciliate, the lowest longer than the others.

Cultivated and spontaneous in places in Mount Lofty Range.—Oct.-Jan.—Europe, western Asia.

10. **T. pratense,** L. *Red Clover.* Closely related to the preceding, but has rather smaller, subsessile heads; uppermost leaves almost sessile; stipules broader; calyx-tube villous outside, the thoat glabrous and with a hardened ring inside.

Same localities as the preceding.

11. **T. striatum,** L. *Knotted Clover.* Ascending, silky-villous annual; leaflets oboval or oblong; stipules broad, abruptly ending in a fine point; flowers small, pink, in ovoid or oblong, sessile, axillary and terminal heads; calyx-tube villous, ovoid, swollen in fruit, with 10 prominent nerves and spreading-erect, stiff awlshaped teeth, nearly equal to each other and almost as long as the tube; corolla about as long as calyx.

Mount Lofty Range.—Oct. - Dec.—Europe; western Asia.

12. **T. arvense,** L. *Hare's-foot Clover.* Slender erect annual, downy with appressed hairs; leaflets linear-oblong to oblanceolate, denticulate at summit; stipules narrow, reddish, with long points; flowers very small, pink, in globular, afterwards oblong, pedunculate heads of a delicate lavender colour; calyx-tube ovoid, villous, teeth bristle-like, plumose, much longer than the tube; corolla shorter than calyx.

Adelaide plains and hillsides. Oct.-Dec.—Europe; western Asia.

13. **T. incarnatum,** L. *Crimson Clover.* Erect annual, softly-villous with appressed hairs; leaflets broad-oboval, denticulate at summit, stipules broad, prominently veined, free part short; flowers red in large, ovoid or oblong-conical heads, solitary on long peduncles; calyx villous, with slender, erect, almost equal teeth, longer than the tube, stiff and spreading in fruit; corolla longer than calyx.

Cultivated and spontaneous in places in Mount Lofty Range.—Oct.-Feb.—Western and southern Europe.

14. **T. angustifolium,** L. *Narrow - leaved Clover.* Stiff, erect annual. villous with white appressed hairs; leaflets linear or linear-lanceolate, acute; stipules long, narrow, with prominent green veins, free part consisting of 2 long, awlshaped points; flowers small, pink, in long cylindrical heads, terminal, solitary, shortly pedunculate; calyx - tube with spreading hairs seated on tubercles. teeth linear-lanceolate, the lowest one the longest, the 2 upper ones united near the base, all ciliate except on the sharp point, rigid and spreading in fruit; corolla a little longer than calyx.

Roadsides and pasture, Mount Lofty Range.—Oct.-Dec. Mediterranean region.

Trifolium angustifolium.

5. MELILOTUS, Adanson.

(Greek *meli*, honey, and *lôtos*, lotus.)

Biennial; racemes long ... ... *M. arvensis* 1
Annual; racemes short ... ... *M. indica* 2

1. **Melilotus arvensis,** Wallroth. *Field Melilot.* Erect or ascending, glabrous biennial; leaflets oblong, denticulate; stipules long, awlshaped; flowers very fragrant, in rather loose racemes, much longer than the leaf; pedicels about as long as the 5-nerved calyx; standard longer than the wings and keel, which are nearly equal; pod small, brownish-yellow, drooping, obovoid, mucronate, transversely furrowed, with a blunt keel on the upper edge; seed 1, smooth.

The ordinary European form has yellow flowers, but the variety with white flowers (var. *albiflora*, Wallroth; *M. Petitpierreana*, Willd.) seems the only one in South Australia. It is very like the European and Asiatic *M. alba*, Desrousseaux (Bokhara Clover), but the latter has scentless flowers, a black, net-wrinkled pod, and is sometimes grown here for fodder.

Gullies and moist places near Adelaide.—Nov.-Apl.—Europe; western Asia.

2. **M. indica,** All. (1785). Erect glabrous annual, but not usually as tall as the preceding; leaflets oblanceolate to oval-oblong, usually notched and mucronate at summit, denticulate; flowers small, yellow, fragrant, in dense blunt racemes longer than the leaf; pedicels longer than the tube of the 5-nerved calyx; standard a little longer than the wings and keel, which are equal; pod small, drooping, subglobular, net-wrinkled, brownish, with 1 smooth seed. *M. parviflora*, Desf. (1800).

Cultivated land or sandy soil near sea.—Called *Californian Lucerne* in the South-East and *Hexham Scent* in New South Wales. — Aug.-Nov. — Mediterranean region; India.

Melilotus indica.

6. Medicago, L.

(Name formed from the Latin *médica*, Greek *mêdikê*, Median; lucerne is said to have been introduced from Media into Greece.)

Pod without spines or tubercles.
  Pod kidney-shaped, 1-seeded ... ... *M. lupulina* 1
  Pod spirally-twisted, with several seeds.
    Perennial; flowers numerous, violet ... *M. sativa* 2
    Annual; flowers few, yellow ... ... *M. scutellata* 3
Pod with spines or tubercles.
  Pod with rather loose coils.
    Pod subglobular.
      Pod downy, with hooked spines, leaflets all green ... ... *M. minima* 4
      Pod glabrous, spines not hooked, leaflets spotted ... ... *M. maculata* 5
    Pod cylindrical or diskshaped, flat or convex at the two ends.
      Peduncles usually 1-flowered ... ... *M. præcox* 6
      Peduncles 2-5-flowered.
        Pod with tuberculate coils ... ... *M. reticulata* 7
        Pod with spiny coils ... ... *M. denticulata* 8
  Pod with compact coils and appressed spines *M. truncatula* 9

1. **Medicago lupulina,** L. *Black Medic.* Downy annual, with long, procumbent stems; leaflets oboval to almost circular, denticulate; stipules broad-lanceolate, entire or toothed; flowers very small, yellow, numerous, in com-

pact ovoid racemes; peduncles slender, longer than the leaf; calyx with narrow teeth, shorter than the corolla; pod small, kidney-shaped, black when ripe, the convex sides with curved concentric nerves; seed 1, ovoid-compressed.

Moist places, Mount Lofty Range; South-East.—Oct.-May.—Europe; Asia. Often cultivated for feed.

2. **M. sativa,** L. *Lucerne.* Sparsely downy perennial, with long, thick, woody rootstock; stems ascending or erect, much-branched; leaflets oblong, toothed at summit; stipules lanceolate, long-pointed, toothed near base; flowers violet or bluish, large, numerous, in dense oblong racemes; peduncles longer than the leaf; pod glabrous or downy, erect, with 3-4 loose coils, open through the centre, brown, faintly netveined, containing several seeds.

Cultivated for fodder where water lies near the surface, or can be supplied by irrigation; now spontaneous in many places. Called *Alfalfa* in U.S.A. and Spanish speaking countries.—Oct.-Apl. Origin uncertain; perhaps a cultivated variety of the European and Asiatic *M. falcata*, L.

3. **M. scutellata,** All. *Snail Medic.* Downy-glandular annual; leaflets oboval, toothed; stipules toothed; flowers yellow, 1-3, on long-awned peduncles shorter than the leaf; pod large, 12-15 mm. (over ½ in.) across, downy, hemispherical, netveined, with 5-6 close, concentric coils with thin edges.

Agricultural areas; rare.—Sept.-Nov.—Mediterranean region.

4. **M. minima,** L. *Burr Medic.* Prostrate annual, whitish-downy with appressed silky hairs; leaflets oblanceolate to oboval, toothed at summit; stipules broad, usually entire, veined; flowers small, yellow, on peduncles shorter than the leaf; pod small, downy, globular, with 3-4 close coils and numerous slender, divergent, hooked spines along the blunt border of the coils.

Pasture.—Sept.-Nov.—Europe; western Asia.

5. **M. maculata,** Willd. *Spotted Medic.* Annual, with a few spreading hairs; leaflets oboval, slightly toothed at summit, usually with a brown spot in the centre; flowers small, yellow, 1-4 on awned peduncles shorter than the leaf; pedicels shorter than calyx-tube; wings shorter than keel; pod glabrous, with 3-4 close coils, bordered by fine, diverging spines, which are not hooked at the end.

Pasture, Mount Lofty Range. Oct.-Nov.—Western and southern Europe; western Asia.

6. **M. præcox,** DC. A little, prostrate, downy annual, resembling a dwarf form of *M. denticulata*, but the flowers are only 1, rarely 2, on peduncles only half as long as the petiole; wing shorter than the keel; pod small,

slightly downy, diskshaped, netveined, with 2-3 coils bordered by divergent hooked spines.

Golden Grove: Square Waterhole.—July-Nov.—Mediterranean region.

7. **M. reticulata,** Benth. Slightly downy annual, prostrate or ascending; leaflets oboval, toothed; stipules with fine teeth; flowers 2-3, on awned peduncles nearly as long as the leaf; pedicels shorter than calyx-tube; wings longer than keel; pod small, glabrous, diskshaped, netveined, coils 3-5, rather loose when ripe, with thin but blunt borders which are fringed on each side by a row of tubercles; seeds few.

Hills and plains near Adelaide.—Sept.-Dec.—Mediterranean region. Resembles the smaller forms of the following species.

8. **M. denticulata,** Willd. *Toothed Medic.* Subglabrous annual; stems prostrate or ascending, often purplish; leaflets large, oboval, wedgeshaped at base, sharply toothed; stipules large, with long fine teeth; flowers small, yellow, 2-6, rarely 1, on peduncles usually awned and shorter than the leaf; pedicels shorter than calyx-tube; wings longer than keel; pod rather large, diskshaped to subcylindrical, finely netveined, with 3-5 close coils, bordered by 2 rows of divergent, more or less hooked spines, varying in length; seeds several.

Medicago denticulata.

Very common and often called "Clover" or "Trefoil" in South Australia.—July - Dec.—Mediterranean region, extending northwards to southern counties of England.

9. **M. truncatula,** Gærtn. Prostrate or ascending, downy annual; leaflets oboval, sharply toothed at summit; stipules finely toothed; flowers 1-3, yellow, on peduncles about as long as the petiole, and terminating in an awn as long as the flowers; pedicels shorter than calyx-tube; calyx downy, with awlshaped teeth nearly as long as the flower; wings shorter than keel; pod downy, cylindrical, shaped like a little barrel, with 4-5 close coils, keeled on the outer edge and with 2 rows of spines diverging to such a degree as to be almost appressed against the pod.

Pasture, Marino.- Sept.-Nov.- Mediterranean region.

7. Vicia, L.

Style bent, bearded on the outer side under the stigma or more or less downy all round the summit: pod usually compressed, oblong or linear. Herbs, sometimes climbing; leaves even-pinnate, stipulate, ending in a simple or branched tendril; flowers axillary.

Flowers in short racemes, or sessile.
  Flowers 1-2, subsessile ... ... *V. sativa* 1
  Flowers 2-5, pedicellate ... ... *V. sepium* 2
Flowers in long racemes.
  Flowers large; pod several-seeded ... ... *V. calcarata* 3
  Flowers small.
    Pod 2-seeded ... ... *V. hirsuta* 4
    Pod 4-seeded ... ... *V. tetrasperma* 5

1. **Vicia sativa,** L. *Common Vetch.* More or less hairy annual, with ascending or erect stems; leaflets in 4-7 pairs, oblong to obcordate, truncate, mucronate; tendrils branched, or rarely simple; stipules toothed, usually with a purple spot; flowers large, red, solitary or twin, almost sessile; calyx-teeth equal, about as long as the tube; pod downy or glabrous, subcylindrical, sessile, 4-5 cm. (1½-2 in.) long; seeds 10-12, globular, smooth.

Two forms are found here: var. *segetalis*, Seringe, with narrow, oblong leaflets, and var. *obovata*, Seringe, with oboval or obcordate, villous leaflets, standard often violet, pods dark-brown, with fibrous partitions between the seeds.

Vicia sativa.

Cultivated and grass-land.—July-Oct.—Europe; western Asia. Cultivated in most countries for forage.

2. **V. sepium,** L. *Bush Vetch.* Climbing, slightly downy perennial; leaflets in 4-6 pairs, oval-oblong; tendrils branched; stipules entire or toothed; flowers dull-purple, spreading horizontally, 2-5 in racemes much shorter than the leaf; 2 upper calyx teeth shorter and connivent; pod glabrous, linear, 25-30 mm. (about 1 in.) long, on a short carpophore, black when ripe.

Roadsides, Mount Lofty Range.—Sept.-Dec.—Europe; western Asia.

3. **V. calcarata,** Desf. *Spurred Vetch.* Slender, climbing, downy annual, with quadrangular stem; leaflets in 5-8 pairs, oblong or linear-oblong; tendrils branched; stipules bifid; flowers narrow, reddish-purple, 1-3 in racemes about half as long as the leaf, the peduncles with an erect awn or spur at the summit; calyx-teeth shorter than the tube, the 2 upper shorter than the others and connivent; pod subcylindrical, 4-5 cm. (1½-2 in.) long, glabrous, light-brown, netveined, on a short carpophore: seeds 5-7, large, globular.

Sandhills and pasture, Grange Road, Brighton.—Aug.-Oct.—Spain and Mediterranean region of Africa.

4. **V. hirsuta,** S. F. Gray. *Hairy Vetch.* Slender, more or less hairy, prostrate or climbing annual; leaflets in 6-10 pairs, small, linear-oblong; tendrils much-branched; stipules deeply cleft; flowers very small, bluish-white, 2-8 on slender awned peduncles shorter than or equalling the leaf; calyx downy with erect, equal teeth; corolla a little longer than calyx; pod small, 8-10 mm. (under ½ in.) long, villous, linear-oblong, 2-seeded.

Cultivated land.—Nov.-Dec.—Europe; western Asia.

5. **V. tetrasperma,** Moench. *Slender Vetch.* Slender, almost glabrous annual; leaflets in 3-5 pairs, linear-oblong; tendrils usually simple; upper stipules entire; flowers very small, lilac, veined, 1-2 on slender peduncles about as long as the leaf; calyx half as long as the corolla, with unequal teeth; pod small, 10-15 mm. (about ½ in.) long, beaded, glabrous, usually 4-seeded.

Cultivated land.—Nov.-Dec.—Europe; Asia.

8. Lathyrus, L.

Differs from *Vicia* in having the style flattened below the stigma and bearded only on the inner side, the staminal tube cut square at the top, instead of obliquely, and the leaflets usually very few.

Flowers solitary, small; stem angular; tendrils simple ... ... *L. sphæricus* 1
Flowers several, large; stem winged; tendrils branched ... ... *L. latifolius* 2

1. **Lathyrus sphæricus,** Retz. Glabrous annual; leaflets in 1 pair, linear-lanceolate; flowers small, red, solitary on long-awned peduncles; pod linear, scarcely compressed, about 5 cm. (2 in.) long, veined; seeds spherical.

Waterfall Gully.—Oct.-Nov.—Mediterranean region.

2. **L. latifolius,** L. *Perennial Pea.* Glabrous perennial with broadly winged stems and petioles; leaflets in 1 pair, oval; flowers whitish-pink to dark-red; pod long, glabrous, with 3 ribs on the back.

Mount Lofty Range; a garden escape. — Oct.-Dec. — Mediterranean region.

Lathyrus sphæricus.

Pisum arvense, L., Field Pea, with large, leafy, auricled stipules, 2-3 pairs of oval leaflets, branched tendrils, peduncles about as long as the stipules and bearing usually 1 flower with bluish standard and purple wings, is sometimes spontaneous in fields where it has been formerly sown for forage. *P. sativum*, L., Garden Pea, differs from it chiefly in having white flowers and whitish, globular, instead of greyish, angular seeds. Europe; Asia.

9. Lupinus, L.

Calyx deeply cut into 2 divergent lips; standard large, with recurved sides; wings cohering at summit and enclosing the incurved keel; stamens united in a tube; pod thick, oblong, hairy, obliquely beaded; leaves long-stalked, digitate, with several entire leaflets; stipules united to the petiole at base; flowers in terminal racemes.

Flowers yellow ... ... *L. luteus* 1
Flowers blue ... ... *L. hirsutus* 2

1. **Lupinus luteus,** L. *Yellow Lupin.* Erect annual, covered with appressed hairs; leaflets 7-9, oblanceolate, villous on both sides; flowers yellow, scented, in distant whorls; calyx silky-villous, the upper lip deeply 2-cleft, the lower 3-toothed; bracteoles linear; pod broad, reddish, very villous; seeds 4-6, smooth, mottled.

Sown to fix and improve sandy soils, and for fodder.—Sept.-Nov.—Mediterranean region.

2. **L. hirsutus,** L. *Blue Lupin.* Stout, erect annual, often 1 m. (3 ft.) high, covered with a soft, white, spreading down; leaflets 7, 9, or 11, oblanceolate, concave, mucronate, downy on both sides; flowers blue, in irregular whorls of 4-5; calyx villous, the upper lip deeply cleft into 2 segments, shorter than the 3-toothed lower lip; 2 linear bracteoles rising from the base of the lips; pod broad-oblong

40-55 mm. (1½-2¼ in.) long, silky-villous, the upper edge wavy; seeds 3-4, large, finely tuberculate, tawny, with brown streaks and dots.

Sandhills, Grange Road; West Wellington.—Aug. - Oct.—Mediterranean region. A valuable plant for binding sand.

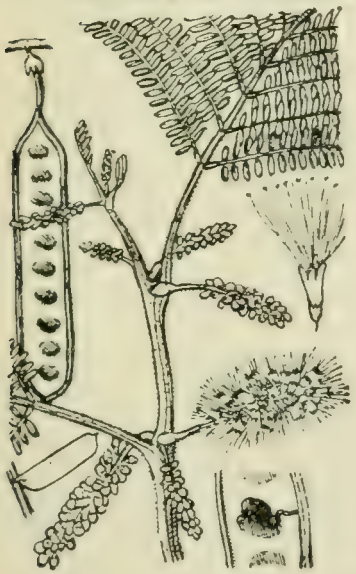
Cæsalpinia sepiaria, Roxburgh, A downy, climbing, prickly shrub, with bipinnate leaves of about 10 primary divisions, each of which bears about 10 oblong leaflets; flowers yellow, in long axillary racemes; pods large, pointed. Planted for hedges in Waterfall Gully.—Nov.—Queensland and India.

Lupinus hirsutus.

9. Albizzia, Durazzini.

(After an Italian naturalist named Albizzi.)

1. **Albizzia lophantha,** Benth. *Crested Wattle.* Small tree with downy branches; leaves bipinnate with 6-10 pairs of primary divisions *(pinnæ)*, each of which carries 20-40 linear-oblong leaflets, with the principal nerve near the upper edge; flowers greenish, in dense cylindrical axillary racemes, much shorter than the leaf; peduncles 2-3 in each axil; calyx campanulate, downy, 5-toothed; corolla 5-lobed, 3 times as long as the calyx; stamens long, protruding, united in a tube near the base; pod about 10 cm. (4 in.) long, flat, linear-oblong, beaded, with 8-11 transverse, ovoid - compressed, blackish seeds, on a slender red funicle.



Albizzia lophantha.

Waterfall Gully; National Park; Willunga. Planted as an ornamental tree and spontaneous in places.—Mar. - Aug.—Western Australia.

Family 17.—ROSACEÆ.

Calyx 4-5-lobed; petals 4-5, rarely more; stamens numerous, inserted with the petals in the throat of the calyx;

ovary free or adherent to the calyx, and consisting of 1 or several carpels, with a corresponding number of styles; leaves alternate.

Woody plants, with prickles or spines.
  Prickly shrubs; carpels numerous.
    Fruit formed of little drupes united in a globular head; ovary superior ... RUBUS 1
    Fruit formed of dry carpels enclosed in the succulent calyx-tube; ovary inferior ... ... ROSA 2
  Spiny shrub; fruit containing 1-3 bony nutlets ... ... CRATÆGUS 3
Herbs; corolla absent; ovary inferior.
  Calyx 4-lobed; flowers unisexual ... ... POTERIUM 4
  Calyx double, 8-lobed; flowers bisexual ... ALCHEMILLA 5

1. RUBUS, L.

Calyx 5-lobed; petals 5; fruit berry-shaped, composed of numerous succulent 1-seeded carpels united on the convex receptacle.

Leaves odd-pinnate, of 3-5 leaflets; stipules united to the petiole at base.
  Leaflets toothed ... ... *R. fruticosus* 1
  Leaflets deeply subdivided ... ... *R. laciniatus* 2
Leaves simple, lobed ... ... *R. moluccanus* 3

1. **Rubus fruticosus,** L. *Blackberry, Bramble.* Rootstock perennial; stems long, erect or recurved, lasting for a few years, armed with prickles and usually more or less hairy; leaflets 3-5, oval-acute, saw-toothed, usually grey-tomentose beneath; stipules long, linear; flowers white or pink in terminal panicles; fruit black.

Near creeks in the Mount Lofty Range.—Oct.-Dec.—Europe, Asia.

2. **R. laciniatus,** Willd. *Cutleaved Blackberry.* Sometimes considered a variety of the preceding, but a very distinct form, owing to the leaflets being deeply incised, with broad mucronate teeth, or even cut to the base into secondary leaflets, green and glabrous above, grey-tomentose below; calyx tomentose, prickly, with long, pinnatifid lobes; petals pink, trifid.

Bridgewater.—Oct.-Dec.—Widely distributed; country of origin uncertain.

3. **R. moluccanus,** L. Branches and petioles densely tomentose, with small recurved prickles; leaves large, thick, almost circular, cordate, with 5-7 short, broad, finely-toothed lobes, bright-green, deeply wrinkled and subglabrous above, rusty-tomentose beneath; flowers large,

pink, in spreading, axillary racemes with a large, deeply-toothed pink bract at the base of each pedicel; calyx villous, with acuminate lobes, the outer ones toothed.

Creeks near Willunga, called locally *French Blackberry.*—Sept.-Nov.—Eastern and northern Australia; Indian Archipelago.

Rubus moluccanus.

2. Rosa, L.

Calyx with an urnshaped tube contracted at the summit and surmounted by 5 segments; petals 5; carpels numerous, 1-seeded, hairy, bony when ripe, and enclosed within the fleshy, berry-like red or black calyx-tube. Shrubs with odd-pinnate leaves; stipules adherent to petiole.

Leaflets glandular beneath ... ... *R. rubiginosa* 1
Leaflets glabrous, or glandular only on the teeth ... ... *R. canina* 2

1. **Rosa rubiginosa,** L. *Sweetbriar.* Dense shrub with stout unequal curved prickles on the stem, often intermixed with short, straight ones; leaves deciduous, leaflets 5-7, small, double-toothed, glandular beneath and on the teeth, the glands fragrant when rubbed; flowers pink, 1-3, on pedicels beset with prickles or stiff, glandular hairs; calyx-segments glandular on the back, usually 3 of them pinnately lobed; fruit ovoid or oblong, often prickly.

Gullies and scrub, Mount Lofty Range.—Oct.-Dec.—Europe.

Rosa canina.

2. **R. canina,** L. *Dog Rose.* Very like the preceding, but without scented glands on the leaves; pedicels and fruit glabrous; outer calyx-segments very long, pinnately lobed and recurved after flowering; fruit almost globular.

Roadsides, hedges, creeks: Adelaide plains and hills.—Oct.-Nov.—Europe; western Asia.

3. Cratægus, L.

1. **Cratægus monogyna,** Jacq. *Hawthorn, May.* Spiny shrub or small tree; leaves deciduous, on slender stalks, dark-green and shining, broad-oval and wedgeshaped at base, deeply pinnatifid, with 3-7 divergent lobes, entire or toothed at summit; stipules large, leafy; flowers white or pink, scented, in corymbs; calyx with 5 spreading lobes; style 1; fruit small, red, fleshy, containing 1 bony nutlet. (Partly *C. oxyacantha*, L.)

Hedges and scrub, Mount Lofty Range.—Fl. Sept.-Nov., fr. Jan. - Feb. — Europe; western Asia.

Cratægus monogyna.

4. Poterium, L.

(Greek *potêrion*, a cup; alluding to the shape of the calyx.)

1. **Poterium Sanguisorba,** L. *Sheep's Burnet, Salad Burnet.* Rootstock perennial, with erect or ascending annual stems; leaves odd-pinnate, of 9-21 oval, toothed leaflets; stipules toothed; flowers in globular or ovoid heads on long peduncles, upper female, lower male; calyx with 4 deciduous lobes; corolla absent; stamens 20-30, drooping, styles 2; fruit (ripe calyx) dry, quadrangular, variously pitted and wrinkled, containing 1-2 1-seeded carpels.

Poterium Sanguisorba.

Sometimes divided into 3 species: *P. dictyocarpum*, Spach, with fruit net-wrinkled and superficially honeycombed (see figure); *P. muricatum*, Spach, fruit with sharp angles and deep pits with toothed edges; *P. Magnolii*, Spach, fruit covered with blunt tubercles.

Cultivated for feed and subspontaneous in places. — Sept.-Feb.—Europe; western Asia.

5. Alchemilla, L.

(Said to be named on account of its uses in alchemy.)

1. **Alchemilla arvensis,** Scop. Small villous

annual, simple or branched; leaves almost circular, palmately cleft into broadly toothed segments and tapering into broad, incised stipules; flowers small, greenish, sessile or pedicellate in axillary clusters, embraced and almost hidden by the leafy stipules; calyx of 8 persistant lobes, in 2 rows, the 4 outer ones very small; corolla wanting; fertile stamens 1-2; carpels 1-2, 1-seeded, enclosed in the hardened calyx.

Near Gawler; Beachport.—Sept. - Nov.—Europe; western Asia.

Alchemilla arvensis.

Family 18.—ONAGRACEÆ.

1. ŒNOTHERA, L.

Calyx with a long tube which extends far above the adherent ovary, limb of 4 deciduous lobes; petals 4, spreading; stamens 8; style long, with 4 spreading stigmas; capsule 4-celled, opening at the summit by 4 valves; seeds numerous.

Petals about as long as calyx-tube ... ... *Œ. odorata* 1
Petals 2-3 times shorter than calyx-tube ... *Œ. longiflora* 2

Œnothera odorata.

1. **Œnothera odorata,** Jacq. *Evening Primrose.* Villous biennial, with stiff, erect, branching stem and stout taproot; leaves sessile, wavy on the edge, with small, distant teeth and strong white midribs, the radical ones in a rosette, linear-oblong, narrowed at both ends, the stem-leaves lanceolate to linear-lanceolate, half-clasping; flowers yellow, fading red, in a long leafy spike, scented and opening fully at night; petals obcordate, rather shorter than the whole calyx-tube, which is 3-4 cm. (about 1½ in.) long; capsule cylindrical, clubshaped 25-30 mm. (1-1¼ in.) long. *Œ. striata,* Ledebour.

Sandy places.—All the year.—Chili and Patagonia; naturalised in the south of England, Channel Islands, western France, and India.

2. **Œ. longiflora,** Jacq. Differs principally from the preceding in its long calyx-tube (usually 10-12 cm.) 2-3 times longer than the petals. Not nearly so common here as *Œ. odorata.*

Temperate South America. Some botanists propose to unite both these species with *Œ. biennis*, L., a North American plant, distinguished by its capsule, not club-shaped, but tapering towards the summit.

Family 19.—CUCURBITACEÆ.

Flowers unisexual; calyx and corolla 5-lobed; stamens 3, filaments short and thick, 2 of them bearing 2-celled anthers, and the 3rd a 1-celled anther, the cells linear and curved; style short, with 3 thick, notched stigmas; fruit fleshy, with several flat seeds. Weak trailing herbs, often climbing by means of axillary tendrils; leaves simple, alternate, palmately nerved, stalked.

Tendrils simple; anthers appendaged at summit; seeds sharp-edged ... ... CUCUMIS 1
Tendrils 2-branched; anthers without appendages; seeds blunt-edged ... ... CITRULLUS 2

1. CUCUMIS, L.

1. **Cucumis myriocarpus,** Naudin. *Wild Melon.* Annual, rough with stiff hairs and small white bristles seated on tubercles; stems prostrate, angular; leaves oval-cordate in outline, glabrous above, hairy below, deeply divided into 5 oboval, toothed lobes, with broad sinuses between, the middle one largest and often 3-lobed; flowers monœcious, small, axillary, on slender peduncles, males 2-4, females solitary; calyx with 5 short teeth; corolla yellow, striped with green; filaments free, the connective produced above the anthers in a sort of crest; fruit ovoid to globular, 20-25 mm. (about 1 in.) diameter, at first marked lengthwise with dark-green stripes, afterwards yellow, beset with long, weak bristles; pulp very bitter.

Roadsides and cultivated land. —Nov.-Mar.—South Africa.

Cucumis myriocarpus.

2. CITRULLUS, Schrad.

1. **Citrullus vulgaris,** Schrad. Annual; stems prostrate, angular, succulent, woolly to rough-hairy; leaves variable, oval-cordate or triangular in outline, rather

rough above, hairy below, palmately cut into 3 broad, sinuate lobes, the terminal lobe the longest and pinnatifid; petioles stout, villous, nearly as long as the leaves; flowers solitary, axillary, stalked; calyx villous, with linear-lanceolate teeth as long as the tube; corolla yellowish, downy, 25-35 mm. (over 1 in.) across; filaments free; ovary silky-villous; fruit globular or oblong 7-15 cm. (3-6 in.) diameter, glabrous, smooth, green-striped, mottled with white, or all yellow; flesh bitter or sweet.

Citrullus vulgaris.

Sandy land, cultivated or uncultivated. This is the *Watermelon* or *Piemelon* gone wild.—Jan.-Mar.—Africa.

Crassula tetragona, L., a succulent branching perennial, has been found localised near Happy Valley as a garden escape. Leaves subcylindrical, acute, flattish above and somewhat 3-angled or 4-angled in section, 20-25 mm. long, opposite and each pair at right angles to the next; flowers small, white, in corymbose panicles; sepals, petals, stamens and carpels 5.—Nov.-Dec.—South Africa. The family of the *Crassulaceæ* has fleshy leaves and stems like *Ficoidaceæ*, but the fruit is dry, free, and consists of several distinct carpels.

Family 20.—CACTACEÆ.

1. Opuntia, DC.

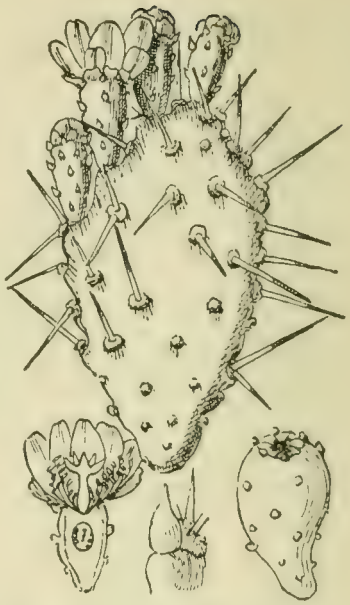
Sepals and petals numerous, overlapping; stamens numerous; style 1, with several stigmas; stems composed of fleshy, superimposed, leaflike joints, bearing several minute, deciduous leaves on their surface; in the axil of each leaf is a small circular cushion *(areole)*, probably representing an aborted branch, covered with a short wool consisting of many jointed hairs, among which are several barbed bristles, and usually one or more spines.

Areoles with 1-2 long spines ... ... *O. monacantha* 1
Areoles usually spineless ... ... *O. vulgaris* 2

1. **Opuntia monacantha,** Haw. *Prickly Pear.* Erect perennial, 2-5 m. (6-15 ft.) high, branching from base; joints flat, oboval or oblong, rather thick, coalescing with age into stout, woody stems, terminal flower-bearing joints smaller and much thinner, sometimes drooping under the heavy

fruit; leaves dark-red, conical; spines rigid, white below, pale-brown near tip, 2-5 cm. (¾-2 in.) long, usually 1 to each areole, sometimes 2, or none; flowers large, sessile on the edge of the terminal joints; sepals and petals in several rows, yellow, striped with red on the back; fruit pear-shaped, with equidistant, spineless areoles, 6-7 cm. (about 2½ in.) long, often proliferous, green, usually suffused with red towards the summit, which has a large round depression surrounded by 5-6 areoles; pulp whitish-green, insipid; seeds few.

Hedges, fields, roadsides.—Nov. - May. — Argentina and Uruguay, where it is called *Tuna*.



Opuntia monacantha.

2. **O. vulgaris,** Mill. *Barbary Fig.* Comparatively low usually spineless perennial, about 1 m. (3 ft.) high; joints flat, oboval; leaves conical, purplish or pink; flowers large, lemon-yellow, greenish on the back; fruit obovoid or pearshaped, dark-red, 5-6 cm. (2-2¼ in.) long; with a large depression at the summit; pulp dark-red, sweetish; seeds numerous.

Railway line and fields near Goolwa.—Nov. - April.—Native of Mexico, carried home by the early Spanish explorers, and naturalised along the Mediterranean coast; hence the name *Barbary Fig (Figuier de Barbarie).*

Family 21.—FICOIDACEÆ.

1. Mesembryanthemum, L.

(Greek *mesêmbria*, midday, and *anthos*, flower, on account of the hour of opening.)

Calyx 4-5 lobed; petals numerous, linear, unequal, in several rows; stamens numerous; styles several, equal in number to the cells of the inferior ovary; fruit a capsule, surrounded by the persistant calyx and opening by valves on the depressed summit.

Plant covered with glistening warts.
- Flowers white; leaves alternate ... ... *M. crystallinum* 1
- Flowers purple; leaves opposite ... ... *M. cordifolium* 2

Plant without glistening warts.
- Stem prostrate; leaves long ... ... *M. acinaciforme* 3
- Stem erect; leaves short ... ... *M. aurantiacum* 4

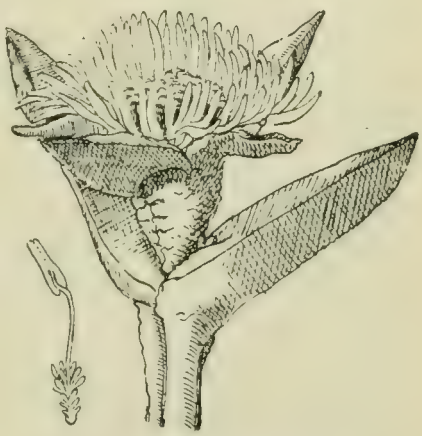
1. **Mesembryanthemum crystallinum,** L. *Ice-plant.* Prostrate fleshy glabrous annual, covered with smooth, glistening papillæ; leaves large, thick, flat, wavy, the radical ones oval-acute, truncate or cordate at base, on a broad 3-nerved petiole, stem-leaves alternate, sessile, oboval; flowers white, on short terminal or leaf-opposed peduncles; calyx-lobes 5, unequal; styles 5; fruit 5-angled.

Sandhills and scrub along coast; a troublesome weed in cultivated land and scrub near Port Germein.—Oct.-Dec. —Mediterranean region.

2. **M. cordifolium,** L. Prostrate perennial, minutely papillose; leaves opposite, flat, oval, subcordate at base, shortly stalked; flowers small, purple, solitary, axillary; calyx-lobes 4, 2 inner ones awlshaped; styles 4; fruit ovoid.

Like the other species mentioned here, this is an escape from gardens; sandy places. Most of the year.—South Africa.

3. **M. acinaciforme,** L. Fleshy glabrous perennial, with prostrate, rooting stems; leaves opposite, united at base, large, glossy, linear-triangular with nearly equal sides, edges often red, the outer edge incurved, rough and hardened in its upper part; flowers large, showy, light-yellow, turning pink, pedunculate and terminal between the last pair of leaves; calyx-tube and peduncle with 2 opposite acute keels, decurrent from the 2 outer lobes; styles 9-11.



Mesembryanthemum acinaciforme.

Very near our native *M. aquilaterale*, Haw. (Pigface), but the leaves are thicker, more acutely angled, of a darker green, and the flowers larger.

Sandhills along Grange Road.—Sept.-Nov.—South Africa.

4. **M. aurantiacum,** Haw. Undershrub, with wiry, erect or ascending, branched stems; leaves opposite, small, linear-triangular and tapering upwards, green-dotted; flowers bright-yellow, showy, on a peduncle thickened up-

wards and rising between the last pair of leaves; calyx-lobes 5, almost equal; styles 5.

Near Port Victor.—Sept.-Nov.—South Africa.

Family 22.—**UMBELLIFERÆ.**

Calyx combined with the ovary, the limb either wanting or reduced to 5 small teeth; petals and stamens 5, inserted round the fleshy disk which crowns the ovary; styles 2, in the centre of the disk; fruit dry, consisting of 2 1-seeded indehiscent carpels, at first united along their inner face *(commissure)*, afterwards separating upwards and remaining suspended on a slender central axis *(carpophore)*, which is entire or more or less deeply split in two; each carpel has normally 5 primary ribs, and between the primary ribs are interstices (furrows) or sometimes 4 secondary ribs, down which run usually 1 or more oil-bearing channels *(vittas)*, which become visible when a transverse section of the ripe fruit is placed under the lens. Flowers in umbels, which are usually furnished at the base with a whorl of bracts *(involucre)*; if the umbel is compound—as in all the species described below—each branch or primary ray bears a simple umbel *(umbellule)*, the bracts at the base of which are called an *involucel*. Herbs with alternate, usually compound leaves, the petiole widened into a sheath at base.

A. Leaves entire; fruit ovoid, somewhat compressed laterally ... ... BUPLEURUM 1
A. Leaves deeply cut.
  B. Fruit prickly.
    Fruit compressed from front to back ... DAUCUS 2
    Fruit compressed from side to side ... CAUCALIS 3
  B. Fruit without prickles.
    C. Carpels with smooth ribs.
      Fruit oblong, not compressed; no involucre ... ... FŒNICULUM 4
      Fruit compressed from side to side.
        Fruit long, with a long beak ... SCANDIX 5
        Fruit subglobular or ovoid.
          Leaf-segments deeply lobed; no involucre; land plant ... ... ARIUM 6
          Leaf-segments merely toothed; involucre present; aquatic plant ... ... SIUM 7
    C. Carpels with wavy ribs; leaves much divided; stem stout, spotted ... ... CONIUM

1. BUPLEURUM, L.

1. **Bupleurum semicompositum,** L. Small, dark-green, glabrous annual; stem slender with short, divergent branches; leaves linear, grasslike, 3-5-nerved; flowers yellow, in terminal umbels of 3-5 very unequal rays; umbellules of 3-6 flowers on short unequal pedicels;

involucre and involucel of 3-5 linear-lanceolate, 3-nerved bracts, those of the involucel exceeding the flowers and fruit; calyx-teeth absent; fruit small, subglobular, compressed laterally, studded with little white tubercles, concealing the ribs; carpophore undivided.

Near Dry Creek.—Sept.-Nov.—Mediterranean region.

Bupleurum semicompositum.

2. Daucus, L.

1. **Daucus Carota,** L. *Carrot.* Erect, bristly annual or biennial, with a taproot which becomes large and fleshy under cultivation; leaves soft, the lower ones bipinnatisect with oval or oblong pinnatifid segments; flowers white or pink, the outer ones with radiating lower petals; umbels large, of 30-60 slender rays, the outer ones longest and connivent in fruit; bracts of the involucre pinnatisect, those of the involucel linear, the outer ones trifid; calyx with 5 short erect teeth; fruit ovoid, slightly compressed dorsally, the 4 secondary ribs of each carpel prominent, each bearing 1 row of long prickles, the 3 primary ribs bearing short, divergent bristles; vittas 1 under each secondary rib and 2 at the commissure; carpophore forked.

Daucus Carota.

Mount Lofty Range.—Nov.-April.—Europe; western Asia.

3. Caucalis, Hoffmann.

1. **Caucalis nodosa,** Scop. Procumbent, rough-villous annual; leaves bipinnatisect, segments oval-oblong, with linear, entire or incised lobes; flowers white or pink, sessile or subsessile, in compact subglobular umbels on a short peduncle opposite to the leaf; umbellules 2-3, sessile on peduncle or on very short rays or reduced to a cluster of flowers; involucre none; involucel with linear bracts longer than

the pedicels; calyx-teeth lanceolate; fruit small ovoid, somewhat compressed laterally, the inner ones tuberculate, the outer ones having the inner carpel tuberculate and the outer one irregularly covered with barbed prickles; vitta 1 under each furrow; carpophore bifid near the summit. *Torilis nodosa*, Gærtn.

Waterfall Gully; Willunga.—Sept. - Dec.—Europe; western Asia.

Caucalis nodosa.

4. Fœniculum, Adanson.

1. **Fœniculum vulgare,** Mill. (1768). *Fennel.* Perennial herb, 1-2 m. (3-6 ft.) high, bright-green, glabrous, strongly aromatic; stems stout, erect, striate, leaves 3-4 times pinnatisect, with numerous long filiform segments, upper ones trifid or entire, with sheaths longer than the blade; flowers yellow, in large umbels of 10-30 long rays on long stout peduncles opposite to the leaf; pedicels of umbellule 20-50; involucre and involucel wanting; calyx-teeth none; fruit oblong; carpels with 5 prominent, blunt ribs and 1 vitta to each furrow; carpophore forked. *F. officinale*, All. (1785).

Fœniculum vulgare.

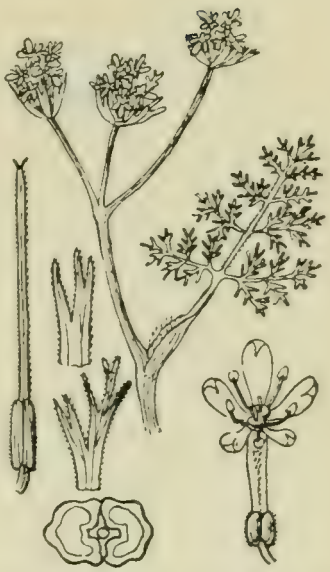
Roadsides, river banks, waste places.—Nov.-Apl.—Central and southern Europe; western Asia.

5. Scandix, L.

1. **Scandix Pecten-Veneris,** L. *Venus's Comb.* Annual, with short stiff hairs and spreading branches; leaves oval in outline, twice or thrice pinnatisect, segments short, with linear lobes; flowers white, in umbels of 2-3 rays; involucre none; involucel of 5 bracts, entire or with 2-3 lobes, which are sometimes pinnatisect; calyx-teeth none; outer petals larger; fruit

linear-oblong, compressed laterally, rough on the edges, prolonged into a beak 3-5 cm. (1¼-2 in.) long; carpels with 5 blunt ribs; vittas none.

Roadsides, gullies, cultivated land.—Sept.-Dec.—Europe; western Asia.



Scandix Pecten-Veneris.

6. Apium, L.

1. **Apium graveolens,** L. *Celery.* Glabrous, shining, aromatic biennial; stem hollow, furrowed; lower leaves pinnatisect with 3 or 5 distant oval segments, each deeply divided into 3 incised lobes, the upper leaves with 3 narrow segments; flowers white, shortly pedicellate, in sessile or subsessile umbels of 4-8 unequal rays; involucre and involucel none; calyx-teeth absent; fruit subglobular, compressed laterally, the carpels with 5 slender, whitish ribs; vittas 1 to each furrow; carpophore undivided.

Apium graveolens.

Waterfall Gully.—Nov.-Jan.—The wild form inhabits marshy land on the sea-coast of most countries.

7. Sium, L.

1. **Sium latijugum,** Clarke. Glabrous perennial, with stolon-bearing rootstock; stem stout, erect, hollow, furrowed, branching; leaves pinnatisect, the lower ones with 8-9 pairs of oval-lanceolate, regularly toothed leaflets, sessile, truncate at base, set at an oblique angle to the axis, upper leaves with fewer, irregularly toothed leaflets; flowers white, in terminal, leaf-opposed umbels of 10-12 unequal rays; involucre and involucel of 4-8 linear-lanceolate bracts, entire or with 1 or 2 teeth; calyx-teeth none; petals slightly notched with an incurved point; fruit small, subglobular, compressed laterally; carpels with 5 blunt, equal ribs, one carpel often abortive; the space

under each furrow occupied by 1 broad vitta; carpophore forked but adherent to the carpels.

Sium latijugum.

Wet ground beside running streams: Waterfall Gully; National Park, Belair; Willunga.—Dec. - Mar.—North-western India. Resembles *S. latifolium*, L., in habit, and is doubtless the plant mentioned under that name by Bentham (*Fl. Aust.* iii., 336) as having been received from "Cape Wilson and Lofty Range," and considered as an arrival from Europe; recorded also by Tate under the same name (*Fl. Extratrop. South Aust.*, 105) as a native of the "Adelaide District." Following C. B. Clarke, in Hooker's *Flora of British India*, ii., 683, the generic character of *Sium* has been here altered, as regards the calyx-limb and number of vittas, so as to include this species. It is probably indigenous to Australia, as an early introduction from the highlands of India is unlikely. Clarke records the plant from Kashmír and Baltistán at heights of 5,000-9,000 ft.

Conium maculatum, L. (Hemlock), is grown in gardens as an ornamental plant under the name of "Carrot Fern," and will probably escape, as it has done in the eastern States. Dr. R. S. Rogers found it growing wild on South Neptune Island, January, 1907. A tall, erect biennial, with stout purple-spotted stems; leaves gracefully divided into many small, pinnatifid segments; rays 10-15; involucre of about 5 bracts, involucel 1-sided, of 3 bracts; fruit compressed; carpels ovoid, with 5 prominent, usually wavy-crenate ribs; carpophore bifid. Poisonous and ill-smelling when bruised.—Oct.-Nov.—Europe; western Asia.

Class 3.—MONOPETALÆ.

Flowers with 2 floral envelopes (calyx and corolla); petals more or less united, so as to form a single corolla; stamens almost always inserted on the corolla.

Family 23.—**CAPRIFOLIACEÆ.**

1. Sambucus, L.

1. **Sambucus nigra,** L. *Common Elder.* Small tree or shrub; branches full of white pith; leaves oppo-

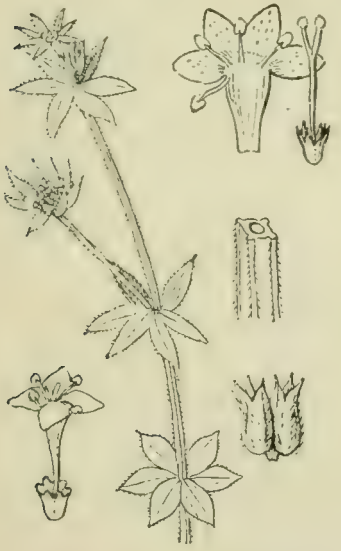
site, odd-pinnate, with 5-7 leaflets on short petiolules, oval-acuminate, regularly toothed: flowers white, scented, in a large flat corymb, with 5 principal branches; calyx with 5 small teeth; corolla wheel-shaped, with 5 spreading lobes; stigmas 3, sessile; berry black when ripe.

Subspontaneous in Mount Lofty Range.—Fl. Oct., fr. Jan.—Central and southern Europe.

Sambucus nigra.

Family 24.—**RUBIACEÆ.**

Corolla funnelshaped; fruit crowned by the 6 persistant calyx-teeth SHERARDIA 1
Corolla wheelshaped; fruit naked at summit GALIUM 2



Sherardia arvensis.

1. SHERARDIA, L.

(After Wm. Sherard, an English botanist.)

1. **Sherardia arvensis,** L. *Field Madder.* Small annual, with slender procumbent stems, rough-hairy on the 4 angles; leaves usually in whorls of 6, often of 4 near the base of the stems, lower ones oboval, upper lanceolate; flowers lilac, in little terminal heads surrounded and exceeded by an involucre of 8 floral leaves united at base; corolla with a long tube and 4 spreading lobes; stamens 4, protruding; fruit oblong, rough, formed of 2 united carpels, each crowned by 3 of the enlarged calyx-teeth.

Roadsides, pasture, cultivated land.—Sept.-Dec.—Europe; western Asia.

2. GALIUM, L.

Calyx-limb none; corolla with scarcely any tube and 4 spreading lobes; stamens 4; fruit of 2 united carpels without any crown.

Stems stout; carpels globular ... ... *G. tricorne* 1
Stems slender; carpels linear-oblong ... ... *G. murale* 2

1. **Galium tricorne,** With. *Three-horned Bedstraw.* Annual; stems ascending, clinging to other plants by curved prickles on the 4 angles; leaves in whorls of 6 or 8, linear-lanceolate, mucronate, the edges and midrib prickly; flowers small, whitish, in 2 opposite, axillary, 3-flowered clusters on peduncles shorter than the leaves; pedicels recurved in fruit and usually with 2 long bracts at base; carpels globular, covered with short, sharp tubercles.

Galium tricorne.

Roadsides and cultivated land. —Oct. - Nov.—Europe; western Asia.

2. **G. murale,** All. Small, weak, almost glabrous annual, with slender, erect, or procumbent stems; leaves in whorls of 4-5, oblanceolate, mucronate, rough-ciliate; flowers greenish-yellow in axillary whorls of 1-3 on very short pedicels, which are recurved in fruit; carpels linear-oblong, hanging below the leaves, the outer carpel covered with hooked hairs, the inner one hairy only in the upper part.

Pasture: Morialta Gully; Strathalbyn; Dublin; Beetaloo.—Sept.-Oct.—Mediterranean region.

Family 25.—**VALERIANACEÆ.**

Calyx-limb rolled inwards during flowering;
corolla-tube spurred; stamen 1 ... ... CENTRANTHUS 1
Calyx-limb erect.
Corolla 2-lipped with a long tube;
stamens 2 ... ... FEDIA 2
Corolla regular with a short tube; stamens 3 VALERIANELLA 3

1. CENTRANTHUS, DC.

(Greek *kentron*, spur; and *anthos*, flower.)

1. **Centranthus ruber,** DC. *Red Valerian.* Glabrous and glaucous perennial, sometimes 1 m. (3 ft.) high; stems erect, smooth, hollow; leaves oval-acuminate or oblong-lanceolate, entire or slightly toothed; flowers red or white, in dense, 3-branched corymbs, lengthening into an oblong, terminal panicle; calyx-limb spreading out, after flowering, in a campanulate, feathery pappus; corolla

irregular, with 5 spreading lobes and a long cylindrical tube, spur longer than ovary; style filiform; fruit small, dry, 1-celled, 1-seeded.

Glen Osmond Road.—Oct.-Apl.—Mediterranean region.

Centranthus ruber.

2. FEDIA, Gærtn.

1. **Fedia Cornucopiæ,** Gærtn. *African Valerian.* Glabrous annual, with thick hollow stems branching dichotomously; lower leaves oboval, almost entire, upper ones oval, coarsely toothed at the base; flowers purplish-pink, sessile in dense heads on 2 stout terminal peduncles; calyx-limb erect, with 2-4 unequal teeth; corolla with a long narrow tube swollen at base, and 5 unequal lobes arranged in 2 lips; fruit with 3 cells but 1 seed, in 2 different forms, the lower ones growing between the peduncles, oblong and crowned by the calyx-teeth, the upper fruits ovoid-compressed, with a very short crown.

Fedia Cornucopiæ.

Waterfall Gully.—Sept.-Nov.—Mediterranean region.

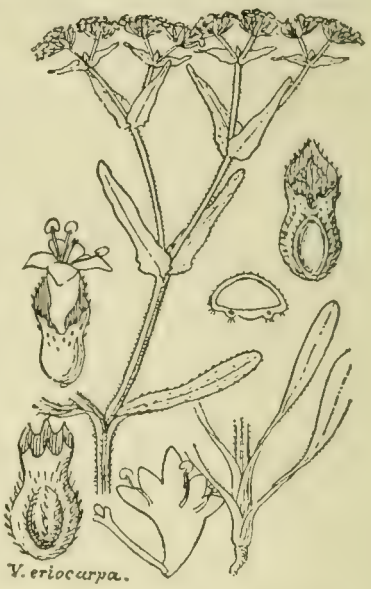
3. VALERIANELLA, Haller.

(Diminutive of *Valeriana*, another genus of this family.)

Calyx-limb erect, with 1 or more teeth; corolla with 5 almost equal lobes; stamens 3; style 1 with 3 stigmas; fruit 3-celled, but 2 of the cells are sterile; flowers very small.

Fruits in compact flattened heads.
Calyx-limb obliquely truncate, 1-toothed ... *V. truncata* 1
Calyx-limb crownshaped, with 5-6 teeth ... *V. eriocarpa* 2
Fruits in compact globular heads; calyx-limb regularly toothed ... ... *V. discoidea* 3

1. **Valerianella truncata,** Betcke. Small hairy annual, with erect 6-ribbed stems and forked branches; leaves oblong, stem-clasping, the upper ones sometimes with 1 or 2 teeth near the base; flowers pale-purple, in dense flat-topped heads, surrounded by lanceolate, ciliate bracts, and supported on 2 stout peduncles, in the fork of which is produced 1 early flower and fruit; calyx-limb netveined as long and as broad as the fruit, cut obliquely so that the posterior tooth takes the shape of a pointed ear, the other teeth almost obsolete; fruit ovoid, downy, with an oval depression in front, the 2 sterile cells reduced to narrow channels within the 2 longitudinal ribs which surround the depression.



Valerianella truncata.

Fields along Glynde Road.—Oct.-Nov.—Mediterranean region.

2. **V. eriocarpa,** Desvaux. Differs from the preceding only in the calyx, whose limb forms an oblique crown, with 5 or 6 teeth.

Waterfall Gully.—Oct.-Nov.—Mediterranean region.

3. **V. discoidea,** Loiseleur. Like the preceding in habit, but the lower leaves are coarsely toothed and the upper ones toothed or pinnatifid with linear lobes; flowers purplish in dense heads which become globular, on short peduncles and surrounded by oval, ciliate bracts; calyx-limb cut almost to the base into 6 (rarely 5) lanceolate, spreading, hooked teeth, which are sometimes unequally bifid; fruit tomentose, obconical, subquadrangular, with an oval depression in front, the 2 sterile cells as large as the fertile one.

Fields along Glynde Road.—Oct.-Nov. Mediterranean region.

Family 26.—DIPSACEÆ.

Heads resembling those of *Compositæ* in the flowers seated on a common receptacle surrounded by an involucre of bracts, but the anthers are 4 in number and free, and the calyx of each flower is double and persistant, the outer one (*involucel* or *calicle*) with a tube closely surrounding the fruit and marked with furrows and ribs, the inner one (calyx proper) combined with the fruit, narrowed into a

neck at the summit, and then widened into an awned cup; fruit small, dry, 1-celled and 1-seeded, crowned by the calyx-limb and enclosed in the persistant involucel.

1. Scabiosa, L.

(Supposed in olden days to cure the itch, Latin *scabies.)*

1. **Scabiosa maritima,** L. Annual or perennial, sometimes 1 m. (3 ft.) high, hairy or almost glabrous, branching dichotomously; radical leaves stalked, oblong, crenately incised, the middle ones pinnatisect, or lyrate with the terminal lobe pinnatifid, uppermost leaves entire or toothed, or pinnatisect with linear lobes; flowering heads hemispherical, becoming ovoid or oblong in fruit, on long peduncles, flowers in varying shades from dark-purple to white; corolla with 5 unequal lobes, the outer ones radiating; involucral bracts lanceolate, unequal, finally recurved; receptacle conical with ciliate scales; involucel oblong, subquadrangular, with 8 ribs, which are downy in the lower part, and a short, scarious, crenate crown bent inwards; calyx-limb stalked, surmounted by 5 reddish spreading awns and surrounded by a sheath, the lower part of which is combined with the involucel.

Scabiosa maritima.

The variety with involucral bracts nearly as long as the flowers, which are purple, or rarely pink or white, is *S. atropurpurea,* L. (Sweet Scabious, Purple Pincushion), which has long been cultivated in gardens, and is probably the origin of our plant.

Roadsides, fields, gullies, near Adelaide and in the hills.—Nov.-Mar.—Mediterranean region.

Family 27.—COMPOSITÆ.

Flowers sessile and collected together on a common receptacle in heads surrounded by an involucre of several bracts; receptacle naked or furnished with bracteoles *(scales),* which wrap the base of the bud; calyx-tube combined with ovary, the limb consisting of a ring of hairs or scales called a *pappus,* or of a short border or crown, or

altogether absent; corolla monopetalous, sometimes regular and tubular, with 4-5 equal teeth, sometimes irregular, with the limb prolonged on one side in a *ligule* or *ray;* stamens usually 5, the anthers united in a tube round the style, which is cut at the summit into 2 stigmatic lobes (the descriptions of the style apply only to the bisexual flowers); ovary inferior, 1-celled; fruit *(akene)* dry, indehiscent, 1-seeded. The hairs of the pappus are either plumose or simple, but in the latter case they are more or less denticulate under the lens.

The largest family in the vegetable kingdom, comprising about 12,000 species.

Subfamilies.

Flowers in the centre of the head bisexual, rarely unisexual, tubular; those of the circumference female or sterile, ligulate or sometimes tubular, and (in *Ammobium*) bisexual; style not swollen below the stigmatic branches ... ... Corymbiferæ 1

Flowers all tubular, those of the centre bisexual, those of the circumference sterile, larger than the central ones, but never ligulate; style swollen below the stigmatic branches; involucre or leaves spiny ... ... Cynaroideæ 2

Flowers all ligulate, bisexual, the outer ones radiating ... ... Ligulatæ 3

Subfamily 1.—Corymbiferæ.

A. Receptacle naked (without scales between the flowers).
  B. Akenes with a pappus of simple hairs.
    C. All flowers tubular, or the outer ones with inconspicuous rays.
      Anthers without tails.
        Involucral bracts equal, in 1 row ... Senecio 1
        Involucral bracts overlapping, in several rows ... ... (partly) Erigeron 2
      Anthers with tails; involucral bracts overlapping ... ... Inula 3
    C. Outer flowers ligulate ... ... (partly) Erigeron 2
  B. Akenes without a pappus of hairs.
    D. All flowers tubular.
      Akenes ribbed and with a membranous crown ... ... Tanacetum 4
      Akenes without ribs or crown ... ... Artemisia
    D. Outer flowers ligulate.
      E. Pappus of scales.
        Involucral bracts free; scales short, broad.
          Akenes densely woolly ... ... Cryptostemma 5
          Akenes silky, winged, apparently 3-celled ... ... Arctotis 6

Involucral bracts united in a cup at base; scales long, linear ... GAZANIA
E. Pappus none.
F. All flowers fertile ... ... CHRYSANTHEMUM 7
F. Central flowers sterile.
Akenes beaked and curved ... ... CALENDULA 8
Akenes not beaked.
Akenes drupelike, with a hard nutlet ... ... OSTEOSPERMUM 9
Akenes 3-winged ... ... TRIPTERIS 10
A. Receptacle with flattish scales between the flowers; akenes without a pappus of hairs.
G. Outer flowers ligulate.
Leaves alternate.
No pappus; leaves divided.
Ligules almost circular ... ... ACHILLEA 11
Ligules oblong ... ... ANTHEMIS 12
Pappus of scales; leaves entire; involucre spiny ... ... PALLENIS 13
Leaves opposite; pappus of plumose scales ... ... GALINSOGA 14
G. All flowers tubular and bisexual; pappus a membranous cup ... ... AMMOBIUM

Subfamily 2.—CYNAROIDEÆ.

H. Pappus deciduous, consisting of hairs united in a ring at the base.
I. Stamens with filaments united in a tube; receptacle bristly ... ... SILYBUM 15
I. Stamens with free filaments.
J. Receptacle honeycombed but not bristly ONOPORDON 16
J. Receptacle bristly.
K. Pappus of plumose hairs.
Involucral bracts fleshy at base; flowers blue ... ... CYNARA 17
Involucral bracts not fleshy; flowers purple.
Bracts ending in a simple spine CIRSIUM 18
Bracts ending in a pinnate spine PICNOMON 19
K. Pappus of simple hairs; leaves decurrent ... ... CARDUUS 20
H. Pappus persistant (rarely none), consisting of scales not united at base.
Involucral bracts with a jagged or spiny appendage ... ... CENTAUREA 21
Outer involucral bracts large, resembling the stem-leaves ... ... KENTROPHYLLUM 22

Subfamily 3.—LIGULATÆ.

L. Akenes with scaly pappus.
Pappus a small scaly crown; flowers blue ... ... CICHORIUM 23
Pappus of central akenes consisting of long, acuminate scales; flowers yellow HEDYPNOIS 24

L. Akenes with pappus of hairs.
M. Pappus of plumose hairs.
N. Receptacle scaly; akenes mostly beaked ... ... HYPOCHŒRIS 25
N. Receptacle naked.
O. Involucral bracts in 2 or more rows.
Bracts in 2 rows; outer broadly cordate ... ... HELMINTHIA 26
Bracts in several rows; outer not cordate.
Outer bracts loose and spreading; all the akenes with plumose pappus ... ... PICRIS 27
All the bracts erect and appressed; outer akenes with a small crown ... ... THRINCIA 28
O. Involucral bracts in 1 row; akenes beaked.
Beak long, hollow, swollen at base; leaves toothed or cut ... UROSPERMUM 29
Beak not swollen at base; leaves entire ... ... TRAGOPOGON 30
M. Pappus of simple hairs; receptacle naked.
Akenes beaked.
Akenes almost cylindrical, rough towards the top ... ... TARAXACUM 31
Akenes flattened, ribbed lengthwise on each side ... ... LACTUCA 32
Akenes without beak, truncate at summit.
Akenes flattened ... ... SONCHUS 33
Akenes cylindrical ... ... CREPIS 34

1. SENECIO, L.

(Latin for Common Groundsel; said to be from *senex*, an old man, in allusion to the bald appearance of the receptacle after the fruits have fallen.)

Involucre cylindrical, of unequal bracts in 1 row, with a few small accessory bracts at base; flowers (in the 2 species below) all tubular and bisexual; style-branches truncate; anthers blunt at base; akenes cylindrical, with a pappus of simple hairs in several rows; heads in terminal corymbs.

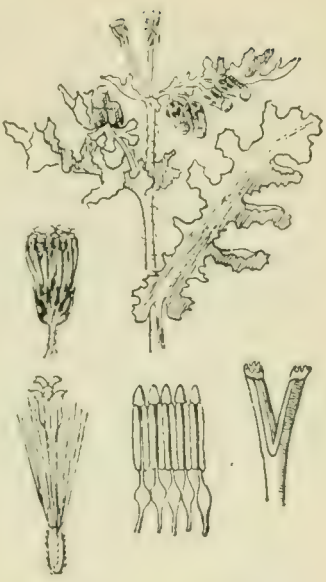
Small annual with sessile pinnatifid leaves *S. vulgaris* 1
Climbing perennial with stalked angular leaves ... ... *S. mikanioides* 2

1. **Senecio vulgaris,** L. *Groundsel.* Erect annual, more or less woolly: leaves pinnatifid, with spreading, sinuate-toothed lobes, the lower leaves stalked, the stem-leaves auricled and clasping; involucre of 14-21 linear bracts, with scarious black ciliate acute tips, accessory bracts in 2-3 rows, black in upper half; akenes striate,

downy; flowers numerous, yellow, scarcely exceeding the involucre.

Some large-leaved specimens of our native *S. brachyglossus*, F. v. Mueller, resemble *S. vulgaris* superficially, but the former has 6-7 small ligulate flowers to each head, the involucral bracts number only 8, and the down of the akene is denser and more silky.

Roadsides, pasture, cultivated land.—July - Nov.—Almost all temperate parts of the globe.



Senecio vulgaris.

2. **S. mikanioides,** Otto. *Cape Ivy.* Glabrous perennial with twining stems; leaves flat, long-stalked, subtriangular with 5-7 very shallow, acute lobes; stipules green, kidney-shaped; involucre of 8 linear, blunt bracts, with a few shorter ones on the pedicel just below the involucre; receptacle honeycombed and the edges of the pits shortly toothed: flowers yellow, 10-12 in head, twice as long as the involucre; akenes almost glabrous. *S. scandens*, DC.

Waterfall Gully.—June-Sept.—South Africa.

2. Erigeron, L.

(Greek for Groundsel, from *êri*, early, and *gerôn*, an old man; alluding to the bald receptacle.)

Involucral bracts in 2-3 rows; central flowers tubular and bisexual, outer ones female tubular or ligulate; style-branches blunt; anthers blunt at base; akenes oblong, compressed; pappus hairs simple, in 1 row.

Outer flowers tubular ... ... *E. linifolius* 1
Outer flowers ligulate ... ... *E. mucronatus* 2

1. **Erigeron linifolius,** Willd. Greyish-green annual, with short, stiff hairs and longer, softer ones; stems erect, striate, simple or branching, and in the latter case the lateral branches exceed the central axis: leaves 1-nerved, tapering at base, the lower ones oblong, with large, distant teeth, the middle ones lanceolate with a few teeth, the uppermost linear and entire: heads drooping in bud, on rather long peduncles, in racemes usually forming a leafy panicle: flowers slightly exceeding the ovoid involucre, the central ones yellowish 6-20, outer female flowers numerous in several rows, tubular, filiform, 2-3-toothed;

pappus hairs about 16, dirty-white; akenes slightly downy. *Conyza ambigua*, DC.

Roadsides, waste places.—Sept. - Apl.—Mediterranean region.

Erigeron linifolius.

2. **E. mucronatus,** DC. Low, evergreen, somewhat downy perennial; stems slender, branching, woody at base, often procumbent; leaves ciliate, mucronate, tapering at base, the lower ones oboval, 3-lobed, the upper ones lanceolate, entire; heads solitary on long peduncles; central flowers yellow; rays narrow, spreading, white above, pink below, numerous (40-80), in 2 rows; pappus hairs about 18, as long as the corolla-tube, with a row of shorter hairs, at base; akenes downy.

An escape from gardens in hills near Adelaide.—All the year.—Mexico. If this species is identical with *E. quercifolius*, Lamarck, of Florida and Arkansas, the latter name has priority,

Erigeron mucronatus.

3. Inula, L.

Involucral bracts in several rows; central flowers bisexual, tubular, outer flowers female, ligulate; anthers with fine tails; style-branches blunt; pappus of simple hairs in 1 row.

1. **Inula graveolens,** Desf. *Stinkwort.* Erect, glandular-hairy, sticky annual, strong-smelling, with many suberect branches; leaves sessile, concave, entire or obscurely toothed, lower ones oblong, upper ones lanceolate or linear; involucre campanulate, its bracts linear-lanceolate, the outer ones herbaceous, the inner scarious; heads numerous, in a loose pyramidal panicle; flowers yellow, central ones 8-12, outer ones 10-12 in 1 row, with rays exceeding the

involucre (in South Australian specimens); akenes subcylindrical, downy, narrowed to a neck at the summit and then expanding into a limb which supports the pappus.

This well-known weed, introduced into South Australia about 1850, has now spread all over the settled districts of this State, Victoria, and New South Wales. It delights in cultivated ground, but also inhabits roadsides and rocky slopes.—Mar.-Apl.—Mediterranean region, extending in France as far north as Paris. Grows in "stony and uncultivated places" (Coste, *Fl. de la France*, ii., 314).

Inula graveolens.

4. Tanacetum, L.

Involucre hemispherical with overlapping bracts; all flowers tubular, yellow; style-branches truncate; anthers blunt at base; akenes ribbed, with a membranous crown.

Plant tomentose; leaf-segments pinnatisect *T. huronense* 1
Plant glabrous; leaf-segments toothed or pinnatifid ... ... *T. vulgare* 2

1. **Tanacetum huronense,** Fischer. Stout, erect, tomentose, strongly scented perennial herb, with creeping rootstock; leaves oval-oblong in outline, more or less white-tomentose, especially beneath, finely bipinnatisect, the axis winged and furnished with small toothed lobes between the linear-oblong segments, the secondary segments or lobes concave, incised and sharply toothed, the stem-leaves sessile; heads in a close corymb; involucral bracts stiff, the middle ones keeled, oval, with broad scarious tips, the innermost narrower; central flowers 5-toothed, the outer row female, 3-toothed; central akenes 5-ribbed, the outer ones 3-angled.

Tanacetum huronense.

Green Hill Road.—Jan.-Mar.—North America.

2. **T. vulgare,** L. *Common Tansy.* Scented perennial, resembling the preceding, but glabrous all over; leaves pinnatisect, the segments dotted, oblong, pinnatifid or deeply toothed, the lobes or teeth often saw-toothed on the outer edge; axis of leaf winged and toothed in the upper part; akenes 5-ribbed.

Mount Lofty Range; a garden escape.—Jan.-Mar.—Europe; Siberia.

Artemisia Absinthium, L. (Wormwood), a silky, downy, strong-smelling European shrub, with small yellow flower-heads in a large panicle and pinnatisect leaves with linear lobes, is frequently planted for hedges, but is scarcely spontaneous. Oct.-Nov.

5. Cryptostemma, R. Br.

(Greek *krypton stemma*, a hidden crown: the scaly pappus being hidden among the wool of the akenes.)

Involucre broad, flattish, bracts broad, unequal, overlapping in 4-5 rows; central flowers tubular, bisexual; outer flowers sterile, ligulate; style thickened in upper part and bifid at summit; anthers blunt at base; akenes 4-angled, enveloped in dense brown wool; pappus of 6-8 lanceolate scales.

1. **Cryptostemma calendulaceum,** R. Br. *Cape Dandelion.* Prostrate, usually stemless annual, with thick, juicy branches; leaves stalked, lyrate or runcinate-pinnatisect, white-tomentose below, the terminal segments rounded, the lateral ones broadly oblong or lanceolate and often auricled at base, variously lobed or toothed; heads large, solitary on long peduncles; outer involucral bracts broad with a linear, ciliate point, the innermost longer with a blunt membranous tip; central flowers almost black, rays pale-yellow, often with a brown blotch at base. A variable plant.

Cryptostemma calendulaceum.

Roadsides, pasture, cultivated land. Aug.-Oct.—South Africa.

6. Arctotis, L.

(Greek *arktos*, bear, and *ous*, ear; alluding to the shaggy, winged akene.)

Involucre and flowers as in *Cryptostemma*, except that

the ray-flowers are female and fertile; receptacle honeycombed, the walls of the pits extended in erect bristles or teeth; akenes silky, 5 ribbed on the back, 2 of the lateral ribs extended in wings and incurved upon the central one, so as to give the appearance of a 3-celled fruit, crowned by a pappus of scales.

1. **Arctotis stœchadifolia,** Bergius. Perennial, softly white-tomentose all over; stems prostrate, rooting; leaves 3-nerved, tapering at base, lower ones lyrate, upper ones oblong to lanceolate, sinuate-toothed; heads large, showy, solitary on long peduncles; outer involucral bracts with spreading, linear, tomentose points, the innermost with a broad, blunt, membranous tip; central flowers dark-coloured rays cream-colored above with yellow base; pappus scales 7-8, pink, oblong, in 2 rows; innermost central flowers sterile and without pappus.

Arctotis stœchadifolia.

Sandhills near Grange. Sept.-Jan.—South Africa.

Gazania Pavonia, R. Br., a small perennial with large showy flowers, is an escape from gardens in Waterfall Gully. Heads solitary on peduncles about as long as the pinnatisect leaves, which have 7-11 narrow segments rough-hairy above and white-tomentose below; rays orange, dark-brown and often with a white eye at base.—South Africa.

7. Chrysanthemum. L.

(Greek *chrysos*, gold, and *anthemon*, flower.)

Involucre broad with unequal overlapping bracts more or less scarious and transparent; receptacle somewhat convex; central flowers tubular, bisexual, ray-flowers female; style-branches truncate.

Ray yellow; leaves deeply cut ... ... *C. coronarium* 1
Ray white; leaves toothed or lobed ... ... *C. Leucanthemum* 2

1. **Chrysanthemum coronarium,** L. *Summer Chrysanthemum*. Erect, glabrous, strongly scented annual with branching stems; leaves bipinnatisect with oblong segments and linear-lanceolate lobes, sessile and auricled at base; heads large, solitary, on the thickened, hollow ends of the branches; central flowers yellow, rays about 14, broad, orange at base and white or yellow in the upper part;

akenes truncate, without any crown, those of the ray triangular and prominently winged, central akenes 4-angled.

Waste places near Adelaide.—Sept. - Dec.—Mediterranean region.

1. **C. Leucanthemum,** L. *Oxeye Daisy.* Erect, almost glabrous perennial; leaves coarsely toothed or almost pinnatifid, lower ones stalked oval-oblong, upper ones oblong, half-clasping; heads large; central flowers yellow, rays 20-30, white; akenes ribbed, usually without any crown.

Roadside near Mount Lofty Station. — Sept.-Dec. — Europe; Siberia.

Chrysanthemum coronarium.

8. CALENDULA, L.

Involucral bracts subequal, in 2 rows; central flowers male, tubular, with an undivided style; ray-flowers female, in 2-3 rows; anthers acute or tailed at base; akenes incurved, outer ones long-beaked, inner ones boatshaped.

Heads large, lower leaves spoonshaped ... *C. officinalis* 1
Heads small, lower leaves oblanceolate ... *C. arvensis* 2

Calendula arvensis.

1. **Calendula officinalis,** L. *Garden Marigold.* Downy, sticky annual; leaves stem-clasping, upper ones oblong to lanceolate, sometimes faintly toothed; heads large, yellow to orange, solitary on stout peduncles; beaked akenes with several rows of teeth on the back.

Waste places near Adelaide.—Nearly all the year.—Southern Europe.

2. **C. arvensis,** L. *Wild Marigold.* Smaller in all its parts than the preceding; upper leaves oblong-lanceolate with a few small distant glands or teeth along the edge; heads comparatively small, yellow, on slender peduncles, drooping in fruit; beaked akenes with a double row of teeth on the back.

Park lands, Adelaide; Grange Railway.—Almost all the year.—Mediterranean region.

9. Osteospermum, L.

(Greek *osteon*, bone, and *sperma*, seed, alluding to the hardness of the fruit.)

Involucral bracts herbaceous, unequal, in about 3 rows; flowers as in *Calendula*, except that the outer ones are in 1 row; akenes drupelike, at first with the outer walls of the pericarp green and juicy, but later on the whole fruit becomes hard and bony.

Osteospermum moniliferum.

1. **Osteospermum moniliferum,** L. Erect, branching undershrub; leaves dull-green, oboval to lanceolate, coarsely toothed, tapering into a short petiole, the young ones tomentose; heads rather large, bright yellow on bracteate peduncles, forming a terminal corymb; ray-flowers 5-6; akenes globular or ovoid. The specific name *(necklace-bearing)* probably refers to the ring of 5 or 6 beadlike fruits crowning the summit of the peduncle.

Gullies of Mount Lofty Range.—July-Oct.—South Africa.

Tripteris clandestina.

10. Tripteris, Lessing.

(Greek prefix *tri*, three, and *pteron*, a wing; alluding to the akenes.)

Involucral bracts in 1 row, equal; flowers as in the preceding genus; akenes large, with the angles extended into 3 broad scarious vertical wings.

1. **Tripteris clandestina,** Less. Erect, branching annual with glandular hairs; leaves oblong, sinuate-toothed, the lower ones tapering at base, the upper ones stem-clasping; heads solitary on long peduncles, drooping in fruit; involucral bracts 8, oblong, with dark,

fleshy midrib and broad, scarious borders; outer flowers 8, about as long as the involucre, with a yellow ray, which is very soon rolled backwards; central flowers about 10, greenish and shorter than the involucre.

Fields between Brighton and Marino.—Aug.-Oct.—South Africa.

11. Achillea, L.

Involucral bracts unequal, in 3-4 rows, with scarious edges; central flowers tubular, bisexual, outer flowers female with almost circular rays; receptacle flattish, with scales; style-branches truncate, anthers acute at base; akenes compressed, without pappus or ribs.

1. **Achillea tanacetifolia,** All. Tomentose or woolly perennial, with creeping root-stock; stems stiff, erect, simple, ribbed, leaves oblong-lanceolate in outline, bipinnatisect, axis winged and toothed in the upper part, segments narrow, the lobes with mucronate teeth; the lower leaves very long, the upper ones half-clasping; heads in a dense, broad corymb; involucre ovoid, hairy; ray-flowers 5, with a broad 3-lobed ligule, dark-red in South Australian specimens, sometimes white in Europe.

Achillea tanacetifolia.

Roadsides and cultivated ground, Mount Lofty Range.—Oct.-Apl.—Southern Europe.

12. Anthemis, L.

Involucre hemispherical with overlapping bracts, receptacle conical at maturity, beset with scales; central flowers tubular, bisexual, outer flowers female, ligulate.

Ray-flowers with a style; downy perennial ... *A. nobilis* 1
Ray-flowers without a style; glabrous, annual ... ... *A. Cotula* 2

1. **Anthemis nobilis,** L. *Common Chamomile.* Downy, scented perennial, with prostrate or ascending stems; leaves whitish-green, once or twice pinnatisect, with short, acute lobes; heads solitary, terminating the branches; involucral bracts oblong with very broad, scarious borders; scales of receptacle oblong, torn at summit; central flowers yellow, ray white; akenes small, cylindrical, with 3

fine ribs on the inner face, crowned by the persistant base of the corolla.

Moist places, Belair, Bridgewater.—Dec.-Apl.—Western Europe from England to Spain.

2. **A. Cotula,** L. *Mayweed.* Ill-smelling, branching annual; leaves bipinnatisect, with linear segments; receptacle conical with awlshaped scales; ray white, centre yellow; akenes tuberculate, without a border at the top.

Waste and cultivated places.—Nov.-Jan.—Europe; temperate Asia.

Anthemis nobilis.

13. Pallenis, Cassini.

(Latin *palea*, a scale; alluding to the scales of the receptacle.)

Involucral bracts stiff, overlapping, terminating in a short spine, the outer bracts long and spreading; receptacle flat, beset with stiff, mucronate scales; central flowers numerous, tubular, bisexual, outer flowers in 2 rows, female, ligulate, 3-toothed at summit.

Pallenis spinosa.

1. **Pallenis spinosa,** Cass. Erect, hairy, branching biennial; leaves entire, villous, the lower ones oval-oblong, the upper ones oblong-lanceolate, half-clasping, mucronate; akenes of the ray compressed, broadly winged, surmounted by one half of the short, scaly, jagged pappus; central akenes subcompressed, with 5 downy ribs and a crown-shaped pappus; flowers yellow. *Buphthalmum spinosum*, L.

Near Paskeville.—Oct.-Dec.—Mediterranean region.

14. Galinsoga, Cavanilles.

(Named after a Spanish physician.)

Involucral bracts few, equal, in 1 row; central flowers bisexual, tubular, outer flowers female, ligulate; style-branches acute;

anthers blunt at base; receptacle conical, scaly.

1. **Galinsoga parviflora,** Cav. Erect, almost glabrous annual; stem branching trichotomously; leaves opposite, lanceolate to oval, 3-nerved, faintly toothed, very shortly stalked; involucre hemispherical, bracts 5, with 2 bracteoles at base; scales of receptacle mostly trifid and 3-nerved; heads small on long, slender terminal or axillary peduncles; central flowers numerous yellow, outer flowers 5, with white almost circular rays; ripe akenes angular, black, downy, tapering at base, those of the ray crowned by a few bristles, those of the centre with a pappus of 14-22 plumose scales.

Cultivated land, Waterfall Gully. Most of the year.—South America.

Galinsoga parviflora.

Ammobium alatum, R. Br. A handsome "everlasting" from New South Wales, with large yellow heads of tubular flowers; white, spreading, petaloid, involucral bracts; long radical leaves and small stem-leaves with decurrent wings, has appeared on the roadside near Summertown.—Dec.

Silybum Marianum.

15. Silybum, Adanson.

Outer involucral bracts broad, overlapping, with stiff, spreading appendages ending in a long spine, and spinulose along the edges at the base; flowers all tubular; stamens with united filaments; akenes oblong, compressed, crowned by an erect border and horned in its centre; pappus deciduous, of simple hairs; receptacle bristly between the flowers.

1. **Silybum Marianum,** Gærtn. *Milk Thistle.* Stout erect, often tall biennial, glabrous or nearly so; leaves glossy and whiteveined above, more or

less pinnatifid, with wavy, prickly edges, the upper ones clasping the stem with broad rounded auricles, but not decurrent; involucre large, globular; heads solitary, terminal; flowers purple.

Common on roads and hillsides.—June-Feb.—Europe; western Asia.

16. Onopordon, L.

Involucral bracts many, tapering into spines; flowers all tubular; akenes obovoid, truncate, subquadrangular; pappus deciduous, of simple hairs in several rows; receptacle without scales or bristles, but deeply honeycombed, and each pit with jagged, toothed borders.

Plant with a leafy, winged stem ... ... *O. Acanthium* 1
Plant stemless; heads sessile ... ... *O. acaule* 2

1. **Onopordon Acanthium,** L. *Scotch Thistle.* Stiff, erect, woolly biennial, branching at summit; leaves oval to lanceolate, sinuate-toothed with spiny edges, white-woolly on both sides, decurrent in broad spiny wings; heads large in terminal corymbs; involucre depressed-globular, bracts white-woolly in lower part, with long, sharp, orange spines, the outer ones spreading; pappus of golden-brown hairs, scarcely twice as long as the akene; akenes grey, wrinkled transversely; flowers purplish.

Onopordon Acanthium.

Horsnall's Gully; Military Road, near Glenelg; near Port Lincoln (J. H. Maiden).—Dec.-Feb.—Europe and western Asia, but very rare in Scotland, although generally supposed to be the origin of the Scottish heraldic thistle.

2. **O. acaule,** L. *Stemless Onopordon.* Stemless biennial, with several sessile or subsessile heads in the centre of a rosette of radical leaves; leaves large, softly white-tomentose on both sides, oblong, pinnatifid, with spiny, wavy lobes; involucre large, globular with glabrous, lanceolate bracts ending in a very sharp spine, the outer ones spreading; pappus of dirty-white hairs, 5 times as long as the akene, which is brown, striate longitudinally and wrinkled transversely; flowers white.

Adelaide plains and near River Murray. — Nov. - Dec. — Mediterranean region.

17. Cynara, L.

Involucral bracts many, overlapping, broad and fleshy at base; flowers all tubular; akenes obovoid, quadrangular; pappus of plumose hairs, receptacle bristly.

1. **Cynara Cardunculus,** L. *Wild Artichoke. Cardoon.* Erect, stout perennial, with ribbed stem; leaves white-tomentose, especially below, the lower ones pinnatisect with numerous lanceolate, pinnatifid segments decurrent in wings along the axis, the lobes ending in a yellow spine; heads very large, solitary; involucre globular, the outer bracts oval-lanceolate, spreading, ending in a stout spine, inner ones oblong, with a membranous tip; flowers blue.

Onopordon acaule.

Cynara Cardunculus.

Roadsides and fields.— Nov. - Feb. — Mediterranean region; introduced and widely spread on the plains of temperate South America *(Cardo de Castilla).* Closely allied to the cultivated Artichoke *(C. Scolymus,* L.).

18. Cirsium, Adanson.

Involucral bracts numerous, overlapping, usually spiny; flowers all tubular: stamens with hairy filaments; akenes oblong, compressed, truncate, smooth and glabrous, without ribs; pappus deciduous, of plumose hairs in several rows; receptacle bristly.

Leaves rough with small prickles on the upper surface, decurrent at base ... ... *C. lanceolatum* 1
Leaves not prickly above; not or slightly decurrent ... ... *C. arvense* 2

1. **Cirsium lanceolatum,** Scop. *Spear Thistle.* Erect biennial, with spiny wings on the stem and branches; stem-leaves deeply pinnatifid, spiny, decurrent, rough above with small appressed prickles, and usually white-woolly beneath, segments lanceolate, spiny, the terminal one long, the lateral ones bifid, with the upper lobe turned outwards and the lower lobe inwards; heads ovoid to globular; involucre woolly, the bracts linear-lanceolate, spreading erect, ending in a fine spine; akenes yellow, with dark streaks; flowers purple. *Carduus lanceolatus,* L.

Cirsium lanceolatum.

Roadsides, gullies, waste places; often erroneously called "Scotch Thistle."—Dec.-June.—Europe; western Asia.

2. **C. arvense,** Scop. *Creeping Thistle, Canada Thistle.* Erect perennial, comparatively low, with creeping rootstock; stem-leaves pinnatifid with spiny edges, sometimes shortly decurrent, white-woolly below or glabrous on both sides; heads small in a loose corymb; involucre ovoid or subcylindrical, the outer and middle bracts lanceolate, erect, with very short pungent points; flowers diœcious, purple.

Picnomon Acarna.

A troublesome weed, but rare.—Dec. - Feb.—Europe, Asia.

19. Picnomon, Cassini.

(Greek *pyknos,* dense, and *komê,* hair; alluding to the dense pappus.)

Character of *Cirsium,* except that the involucral bracts terminate in a pinnate-spinulose spine.

1. **Picnomon Acarna,** Cass. Stout, erect, white-woolly annual, branching from near the base; leaves oblong-lanceo-

late, decurrent, with ciliate-spinulose edges and long, stiff yellow spines terminating the short lobes; heads sessile, terminal, solitary or 2-4 together, within floral leaves resembling an outer involucre and longer than the heads; involucre oval-oblong, woolly, with linear appressed bracts ending in a solitary, recurved spine with spinules pinnately arranged; seeds glossy, yellowish-brown, with 5 white longitudinal streaks; flowers purple.

Roadsides and pastures near Sellick's Hill. Called locally *Soldier Thistle*. Dec.-Feb. Mediterranean region.

20. Carduus, L.

Only differs from *Cirsium* in having a pappus of simple, not plumose, hairs.

1. **Carduus tenuiflorus,** Curtis. *Slender Thistle.* Erect, woolly annual or biennial, with many rather slender branches, winged throughout, the wings wavy and sinuate-spiny; leaves green and somewhat hairy above, white-woolly below, decurrent, the lower ones deeply pinnatifid; heads small, about 2 cm. ($\frac{3}{4}$ in.) long by 1 cm. (under $\frac{1}{2}$ in.) broad, deciduous, usually sessile and forming a terminal cluster; involucre cylindrical-oblong, slightly woolly, bracts lanceolate, erect-spreading, keeled, ending in a weak spine, the inner bracts with white-scarious points as long as the flowers, which are purple; akenes greyish, glossy but striate; pappus white, nearly as long as the flower.

Torrens Gorge; common at Mount Gambier and Naracoorte. —Oct.-Jan.—Western and southern Europe. A species sometimes united with *C. pycnocephalus*, L., which has, however, larger, ovoid, less numerous heads and peduncles not winged at the summit.

Carduus tenuiflorus.

21. Centaurea, L.

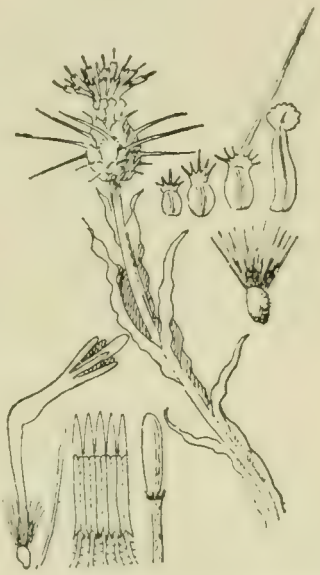
Involucral bracts numerous, overlapping, surmounted by a torn, ciliate or spiny appendage, flowers all tubular, the outer row usually sterile; akenes oblong, compressed, without ribs, truncate and naked at summit or crowned by a short pappus of free scales in several unequal rows; receptacle bristly.

Flowers yellow; leaves decurrent.
Heads solitary; involucral bracts with a very long spine and spinules palmately arranged *C. solstitialis* 1

Heads sometimes clustered; involucral bracts with a short spine and spinules pinnately arranged ... ... *C. melitensis* 2
Flowers purple.
Involucral bracts horny with a very long, spreading spine ... ... *C. Calcitrapa* 3
Involucral bracts appressed; spineless ... *C. paniculata* 4

1. **Centaurea solstitialis,** L. *Yellow Cockspur.* Stiff, erect, white-tomentose annual; radical leaves lyrate, with deep narrow lobes, the upper ones linear, entire, with wavy edges and decurrent in long, narrow wings; heads solitary; involucre urnshaped, outermost bracts small with a few palmate spinules, middle ones ending in a long, spreading, yellow spine with about 4 palmate spinules at base, innermost bracts with small, rounded, torn membranous appendage; akenes shorter than the white pappus; flowers yellow.

Roadsides and cultivated land. —Oct.-Mar.—Mediterranean region; occasional in northern Europe (*St. Barnaby's Thistle* in England).



Centaurea solstitialis.

Centaurea melitensis.

2. **C. melitensis,** L. *Maltese Cockspur.* Resembles the preceding in appearance and leaves, but is rough-hairy and not so white, although woolly in the young parts; heads solitary or 2 or 3 together, sessile among the last leaves; involucre ovoid, middle bracts with a short spreading, reddish spine, bearing about 6 pinnate spinules, innermost bracts with lanceolate appendages; akenes with some loose hairs, and longer than the pappus; flowers yellow, somewhat glandular.

Pasture and cultivated land.—Sept.-Mar.—Mediterranean region.

3. **C. Calcitrapa,** L. *Star Thistle.* Downy or woolly annual

or biennial with many spreading branches and a thick taproot; radical leaves deeply pinnatifid or bipinnatifid, lobes more or less toothed, stem-leaves with a few linear lobes; heads solitary, surrounded by linear-lanceolate floral leaves; involucre urn-shaped, outer and middle bracts usually ending in a long, spreading, horny, yellow, channeled spine with 4-6 spinules pinnately arranged near the base, innermost bracts with rounded membranous appendage; akenes streaked with brown; pappus none; flowers purple.

Roadsides, waste and cultivated places. — Nov. - June. — Southern and western Europe. The specific name alludes to the resemblance of the involucre to the old military caltrop.

Centaurea Calcitrapa.

4. **C. paniculata,** L. Tomentose, greyish-green biennial with spreading branches; lower leaves once or twice pinnatisect, with narrow segments; heads solitary, usually arranged in a long panicle; involucre small, ovoid-oblong, the bracts striate, with a short, appressed, ciliate appendage at top; akenes with a short pappus; flowers purple, the outer row spreading.

Near Hope Valley Reservoir.—Most of the year.—Mediterranean region.

22. KENTROPHYLLUM, Necker.

(Greek *kentron*, a spur, and *phyllon*, a leaf.)

Outer bracts of the involucre spreading, similar to the stem-leaves; flowers all tubular; akenes obovoid, truncate, subquadrangular, the outer ones without, or almost without pappus, inner ones with a pappus of free scales in several unequal rows; receptacle ovoid, with long dense bristles.

1. **Kentrophyllum lanatum,** DC. *Woolly Star Thistle.* Erect annual, branching at summit; stem downy with long hairs near base; leaves olive-green, stiff, glandular, spreading, 5-7-nerved below, half-clasping, pinnatifid, with lanceolate, spiny lobes; involucre large, subglobular, the outer bracts like the upper leaves, the middle bracts lanceolate, woolly at base, ending in a spine, and with distant pinnate spinules, innermost bracts shorter, lanceolate, almost or quite entire; akenes yellowish or

mottled with brown, outer ones transversely wrinkled, inner ones smooth, at least at base, shorter than the longest of the pappus scales; flowers yellow.

Roadsides and waste places; eaten by stock when young.—Nov. - Dec.—Mediterranean region.

Kentrophyllum lanatum.

23. Cichorium, L.

Involucre oblong, the bracts in 2 unequal rows, inner ones 8, outer ones 5, and much shorter; flowers all ligulate: style-branches long, acute; akenes subquadrangular, truncate and crowned by short scales; receptacle bristly towards the centre.

1. **Cichorium Intybus,** L. *Chicory.* Stiff, somewhat hairy, erect perennial, with divergent, striate branches and long taproot; radical leaves runcinate-pinnatifid, stem-leaves lanceolate, clasping, often with pointed auricles, reduced to bracts beneath the flower-heads, which are terminal or axillary, sessile, 1-3; akenes with pappus of very short, blunt scales; flowers large, blue.

Cichorium Intybus.

Roadsides, Glenelg Railway, banks of Torrens.—Nov.-May.—Europe; Asia.

24. Hedypnois, Schreber.

Involucral bracts almost in 1 row, with a row of small outer bracts at base; flowers all ligulate; akenes cylindrical, ribbed, the outer ones incurved, with a short crownshaped, denticulate pappus, inner ones with a double pappus, consisting of an outer row of very short scales and an inner row of long, lanceolate-acuminate bristles; receptacle naked.

1. **Hedypnois polymorpha,** DC. (including *H. cretica*, Willd.). Procumbent or erect annual, branching dichotomously from near the base; leaves rough-hairy, variable, lower ones lyrate-pinnatifid to oblong-lanceolate, sinuate-toothed or entire, narrowed at base, stem-leaves half-

clasping; heads small, solitary, terminating long, stiff, striate peduncles, which are usually hollow and swollen towards the top; involucre cylindrical in flower, globular in fruit, owing to the incurved, rigid bracts, which are glabrous or hairy-spinulose; akenes dark-brown with about 15 rough, longitudinal ribs, those of the outermost row embraced by the involucral bracts, the inner akenes fewer in number, with 4-5 long bristles exceeding the involucre; flowers yellow. Variable plant, sometimes dwarf and unbranched. *Rhagadiolus Hedypnois*, All.

Roadsides, pastures.—Sept.-Nov.—Mediterranean region to India.

Hedypnois polymorpha.

25. Hypochœris, L.

Involucral bracts unequal, overlapping in 2 rows: flowers all ligulate; akenes tapering into a long beak or the outer ones without a beak; pappus of plumose hairs or the outer hairs more or less denticulate; receptacle with linear, deciduous scales.

Leaves hairy; flowers longer than involucre; akenes all beaked ... ... *H. radicata* 1
Leaves subglabrous; flowers scarcely longer than involucre; outer akenes not beaked *H. glabra* 2

1. **Hypochœris radicata,** L. *Rooted Cat's-ear.* Perennial with thick rootstock; stems stiff, erect, branching, glabrous or hairy near base, without leaves, but with distant, herbaceous, lanceolate scales; leaves in a radical rosette, rough-hairy, oblong, sinuate-toothed or pinnatifid with blunt lobes; heads large, terminating peduncles swollen upwards, forming a corymb; involucre shorter than the bright-yellow flowers, bracts lanceolate with scarious edges, glabrous or bristly on the back; akenes reddish-brown with longitudinal denticulate ribs, all long-beaked; pappus in 2 rows, the

Hypochœris radicata.

outer row short and denticulate, the inner row long and plumose.

Roadsides, pasture.—Nearly all the year.—Europe.

2. **H. glabra,** L. *Glabrous Cat's-ear.* Resembles the preceding, but is annual, with a slender taproot; stems glabrous, naked, except for a few scales at the summit, sometimes tall and branched, sometimes short and simple; leaves radical, glabrous or with a few stiff hairs on the upper side, sinuate-toothed or pinnatifid, with acute lobes; heads rather small; involucre about as long as the yellow flowers, bracts glabrous, lengthening in fruit; akenes as in the preceding, except that the outer ones have no beak, and the long pappus hairs of the outer akenes are densely and intricately plumose at the base and scarcely more than denticulate above.

Roadsides, pasture.—Oct.-Dec.—Europe.

26. Helminthia, Jussieu.

(Greek *helminthion*, a little worm; in allusion to the wrinkled seeds resembling a bundle of small worms.)

Involucral bracts in 2 rows; outer ones few, ovate-cordate, inner ones lanceolate with long points; flowers all ligulate; akenes long-beaked with plumose pappus; receptacle naked.

1. **Helminthia echioides,** Gærtn. *Ox-tongue.* Erect, annual, covered with stiff hairs, mostly seated on tubercles and some of them hooked; radical leaves oblong, entire or faintly toothed, narrowed into a petiole, the upper ones embracing the stem with 2 rounded auricles; outer involucral bracts usually 5; inner 8; heads corymbose, on stout peduncles; akenes yellow or reddish, wrinkled transversely, ending abruptly in a slender beak as long as the akene; flowers yellow.

Helminthia echioides.

Roadsides and waste places.—Dec.-May.—Europe; western Asia.

27. Picris, Jussieu.

Involucral bracts loosely overlapping in several rows, outer ones usually spreading; flowers all ligulate; akenes tapering upwards; pappus deciduous, all the hairs plumose or the outer ones denticulate only; receptacle naked.

1. **Picris hieracioides,** L. Erect, branching biennial, rough with spreading hairs which are often hooked; leaves oblong-lanceolate, lower ones sinuate-toothed, tapering into a long, winged petiole, upper lanceolate, entire, half-clasping; heads in a broad corymb, sometimes almost umbellate; involucral bracts more or less hairy; akenes yellow, curved, longitudinally ribbed and transversely wrinkled, tapering upwards so as often to form a short beak; pappus dirty-white, the long inner row of hairs plumose, the outer ones shorter and merely denticulate; flowers yellow.

Picris hieracioides.

Gullies and sea-coast near Adelaide, the outer involucral bracts very spreading, and the akenes distinctly beaked in the maritime form (var. *squarrosa*, Benth.).—Oct.-Jan.—Europe; Asia.

28. Thrincia, Roth.

(Greek *thrinkos*, a feather; alluding to the feathery pappus.)

Thrincia hirta.

Involucre of 2 inner rows of equal bracts and 1 outer row of very short bracts; flowers all ligulate; outer akenes with a crownshaped pappus, inner ones with a pappus of plumose hairs, slightly enlarged at the base; receptacle naked.

1. **Thrincia hirta,** Roth. *Lesser Hawkbit.* Biennial or perennial, with a short thick rootstock, from which arise several long, glabrous peduncles bearing solitary terminal heads; leaves all radical, oblong, pinnatifid or almost entire, more or less hairy; involucre hairy or glabrous, the inner bracts about 12, wrapping the outer akenes, which are thick, curved, blunt at base, wrinkled transversely and

surmounted by a short-toothed crown, the central akenes tapering upwards, but scarcely beaked, with a pappus of long plumose hairs and an outer row of short, denticulate hairs; flowers yellow. *Leontodon hirtus*, L.

National Park, Belair.—Dec.-May.—Central Europe.

29. Urospermum, Jussieu.

(Greek *oura*, a tail, *sperma*, seed; alluding to the long beak of the akene.)

Involucre of 8 bracts, in 1 row and cohering at base; flowers all ligulate; akenes compressed, surmounted by a long, hollow beak enlarged at base; pappus deciduous, of plumose hairs shortly united at base; receptacle naked except for a few short hairs.

Urospermum picroides.

1. **Urospermum picroides,** Desf. Erect, bristly, branching annual; lower leaves oboval-oblong, coarsely toothed or almost pinnatifid, the upper ones lanceolate, clasping the stem by 2 acute auricles; peduncles long, bearing solitary heads; involucre urnshaped, bristly, bracts oval-lanceolate; akenes tuberculate, with a curved beak, swollen at base and twice as long as the akene itself; pappus pure white, plumose from the base; flowers yellow.

Athelstone; Belair; Blackwood; Kangaroo Island.—Oct.-Dec.—Mediterranean region.

30. Tragopogon, L.

(Greek *tragos*, a goat, *pôgôn*, a beard, alluding to the pappus.)

Involucre of 5-12 equal bracts arranged in 1 row, but overlapping at base; flowers all ligulate; receptacle naked; akenes oblong-cylindrical, rough, tapering into a long, slender beak; pappus plumose.

1. **Tragopogon porrifolius,** L. *Salsafy.* Glabrous biennial with a long taproot, which is cultivated and eaten in Europe: stem erect, branched or simple; leaves broad-linear, grasslike, half-clasping; peduncles long, swollen and hollow at the summit, and bearing 1 large terminal flowerhead; involucral bracts about 8, narrow-lanceolate, usually longer than the violet

flowers; akenes tapering at both ends, the outer ones with 10 denticulate ribs, the inner ones almost smooth; beak rather longer than the akene; pappus of unequal, plumose, golden-brown hairs, with soft, interwoven barbs.

Roadsides and gullies. — Oct.-Dec. — Mediterranean region; rare in northern Europe.

Tragopogon porrifolius.

31. Taraxacum, Jussieu.

Involucre of several equal inner erect bracts, and many outer shorter ones, in several rows; flowers all ligulate; akenes oblong-cylindrical, tapering into a long slender beak; pappus of simple hairs in several rows; receptacle naked.

1. **Taraxacum officinale,** Weber. *Common Dandelion.* Rootstock perennial, thick; leaves in a radical rosette, runcinate-pinnatifid; glabrous or hairy, lobes triangular, variously cut or slightly toothed; heads with yellow flowers on radical peduncles; akenes greyish striate, spinulose at summit, shorter than the beak. *T. Dens-leonis,* Desf.

Taraxacum officinale.

The variety with narrow leaf-lobes and reddish akenes is *T. erythrospermum,* Andrzeiowski.

Roadsides and pasture. —Most of the year.— Europe; Asia.

32. Lactuca, L.

(Latin *lac,* milk; these plants have a milky juice.)

Involucre cylindrical, of unequal overlapping bracts, those at the base short; flowers all ligulate; akenes much compressed, striate on both sides, long-beaked; pappus of many simple hairs; receptacle naked.

1. **Lactuca saligna,** L. *Willow Lettuce.* Glabrous, stiff, erect biennial, often branching from the base; leaves narrow with a prominent white midrib, the lowest ones usually runcinate-pinnatisect with linear or lanceolate lobes, the upper ones entire, linear, erect, clasping the stem by 2 acute auricles; flowerheads clustered along the stem and the short branches, each head containing 8-12 yellow flowers; akenes dark, shorter than the slender white beak; pappus silky.

Near Wolseley; locally called "Irish Thistle."—Nov.-Feb.—Europe; western Asia.

Lactuca saligna.

33. Sonchus, L.

Involucral bracts numerous, unequal, overlapping, conical after flowering; flowers all ligulate and very numerous in the head; akenes compressed, ribbed longitudinally, without beak; pappus of simple, silky hairs; receptacle naked.

Leaves with acute auricles; akenes wrinkled *S. oleraceus* 1
Leaves with rounded auricles; akenes almost smooth ... ... *S. asper* 2

Sonchus oleraceus.

1. **Sonchus oleraceus,** L. *Common Sowthistle.* Erect annual, with a thick, hollow stem, glabrous or with a few glandular hairs near the summit; lower leaves runcinate, lobes irregularly and sharply toothed, with winged petioles; stem-leaves runcinate, or the uppermost lanceolate, clasping the stem with acute or acuminate auricles; heads corymbose, sometimes umbellate; involucre glabrous; akenes brown, oboval-oblong, ribbed lengthwise and wrinkled transversely; flowers yellow.

A common weed of cultivation.—July-Dec.—Almost cosmopolitan.

2. **S. asper,** All. *Rough Sowthistle.* Resembles the pre-

ceding, but the leaves are stiff, often undivided, dark-green, more prickly on the edges and clasping the stem with rounded auricles; akenes brown, oboval, winged, and smooth except for 3 longitudinal ribs.

Gullies, cultivated land and near sea.—Aug.-Jan.—Almost cosmopolitan.

Var. *littoralis*, Black. A coarse maritime variety; leaves leathery, oblong, pinnatifid, with rounded lobes and wavy, prickly edges; involucre nearly twice as large as in the typical form, 18-20 mm. (about $\frac{3}{4}$ in.) long; akenes large, orange or brown, broadly winged.

Sea-coast from Port Adelaide to Cape Northumberland.—All the year.—Possibly indigenous.

34. Crepis, L.

Involucre of 2 rows of equal inner bracts, with several shorter outer bracts at base; flowers all ligulate; akenes cylindrical, somewhat narrowed at summit, with a copious pappus of simple hairs; receptacle naked.

1. **Crepis virens,** L. *Green Crepis.* Annual, with an erect, striate stem, glabrous or downy below, and glandular above; leaves flat, the radical ones stalked, oblong, pinnatifid, stem-leaves lanceolate, with narrow teeth or lobes and acute, clasping auricles; heads rather small, on long peduncles, forming a loose, corymbose panicle; involucre conical after flowering, bracts linear, glandular-hairy, the outer ones very narrow; akenes golden, 10-ribbed, very small, shorter than the white-silky pappus; flowers yellow.

Mount Gambier.—Dec.-Feb.—Europe.

Crepis virens.

Family 28.—AMBROSIACEÆ.

Flowers monœcious, the males in globular, deciduous heads, surrounded by an involucre; the females 1 or 2 enclosed in a spiny involucre; no calyx; corolla tubular with 5 equal teeth in the male flowers, in the females none; stamens 5, with free anthers;

style 1, with 2 long branches; ovary inferior; fruit dry, hard, enclosed in the involucre.

Male flowers with an involucre of free bracts; receptacle scaly; female flowers 2 together; fruit rather large, 2-seeded — XANTHIUM 1

Male flowers with a 1-leaved involucre; receptacle naked; anthers pointed; female flowers solitary in the involucre, clustered within bracts; fruit small, 1-seeded — AMBROSIA

1. XANTHIUM, L.

1. **Xanthium spinosum,** L. *Bathurst Burr.* Stout annual, branching from base, downy with appressed hairs; leaves stalked, soft, dark-green above, with white nerves, white-tomentose below, wedgeshaped at base, entire or 3-5-lobed, the terminal lobe long, lanceolate; one or two 3-branched spines at the base of each leaf; male heads in the upper axils; female heads of 2 combined flowers in a closed, spiny involucre; fruit downy, covered with yellow, hooked spines, terminating in 2 unequal beaks.

Xanthium spinosum.

A troublesome weed on roadsides, pastures, and waste places. Feb.-July.—Probably of South American origin; now naturalised in most warm countries.

Ambrosia artemisifolia, L., a villous North American weed, naturalised in Europe, has appeared near Mount Barker. Lower leaves bipinnatisect; flowers in long cylindrical spikes (the male flowers above), forming a panicle; fruit obovoid, beaked, with 4-6 small tubercles or spines near the summit.

Family 29.—**PRIMULACEÆ.**

1. ANAGALLIS, L.

1. **Anagallis arvensis,** L. *Pimpernel.* Procumbent glabrous annual, with weak quadrangular stem and branches; leaves opposite or in whorls of 3, sessile, oval, 3-5-nerved; flowers red or blue, solitary in each axil, on slender peduncles longer than the leaves and finally recurved; calyx of 5 lanceolate segments; corolla wheelshaped, with a very short tube and 5 oval segments, crenate and glandular at the summit; filaments

hairy; capsule globular, 1-celled, opening transversely by a lid: seeds numerous on a free central placenta.

Cultivated land, pasture.—Sept.-Apl.—Europe.

Anagallis arvensis.

Family 30.—OLEACEÆ.

1. Olea, L.

1. **Olea europæa,** L. *Olive.* Shrub or tree with greyish branches; leaves opposite, persistant, shortly stalked, oblong-lanceolate, entire, stiff, glossy-green and glabrous above, covered with minute white scales below; flowers creamy-white, in axillary racemes much shorter than the leaves; calyx with 4 short teeth; corolla with a short tube and 4 spreading lobes; stamens 2; fruit a fleshy oblong drupe, black when ripe, with a bony nutlet containing 1-2 seeds.

Olea europæa.

Cultivated in the moister parts of the State and subspontaneous in places.—Fl. Oct.-Nov., fr. May-June.—Mediterranean region.

Family 31.—APOCYNACEÆ.

1. Vinca, L.

1. **Vinca major,** L. *Periwinkle.* Perennial, propagating itself chiefly by the long, prostrate, sterile stems which root at the nodes; leaves opposite, large, shining, oval, enlarged and subcordate at base, glabrous except for the minute hairs along the edge; flowering stems stiff, almost erect; flowers blue, on peduncles shorter than the leaves; calyx with 5 linear, ciliate segments nearly as long as the corolla-tube; corolla-limb flat, spreading, consisting of 5 broad obliquely truncate lobes; stamens bent and hairy at base; style 1, swollen at summit into a ring, on which is seated the 5-angled stigma with

a crown of hairs; fruit consisting of 2 follicles containing several seeds.

Gullies and moist sheltered places. — July-Sept. — Central Europe and Mediterranean region.

Vinca major.

Family 32.—

ASCLEPIADACEÆ.

1. Gomphocarpus, R. Br.

(Greek *gomphos*, a nail, and *karpos*, fruit; alluding to the bristles on the fruit.)

Calyx and corolla 5-cleft, lobes of corolla recurved; stamens 5, the filaments and anthers united in a tube surrounding the ovary and stigma, the filaments also bearing 5 pouchshaped, obliquely truncate appendages which cover the back of the anthers and are called the *corona*; anthers opening inwards and surmounted by a membranous appendage appressed on the stigma; pollen cohering in waxy masses, which hang in pairs from small peglike processes of the stigma; styles 2, short, united under the flat-topped, 5-angled stigma; seeds numerous, crowned by a tuft of long, silky hairs; fruit a large, inflated, leathery follicle, studded with soft spines or bristles; flowers in terminal and axillary, pedunculate, drooping umbels; pedicels long, recurved in fruit; leaves opposite; branches containing milky juice.

Gomphocarpus arborescens.

Stems stout, spreading; leaves oval *G. arborescens* 1
Stems slender, erect; leaves linear-lanceolate ... ... *G. fruticosus* 2

1. **Gomphocarpus arborescens,** R. Br. Undershrub, with stout downy stems, branching dichotomously; leaves oval-oblong, entire, mucronate, subsessile, leathery, with conspicuous, oblique, parallel veins; umbels downy of 10-20 flowers; corolla-lobes creamy-white above, downy and

purplish below; segments of corona slightly compressed, the outer edge higher than the inner; follicles ovoid-acuminate, downy, with a few soft spines.

Roadsides and gullies, Mount Lofty Range.—Apl.-Aug. —South Africa.

2. **G. fruticosus,** R. Br. Undershrub with slender erect stems, branching above, young parts white-downy; leaves long, linear-lanceolate, tapering at both ends: umbels loose, of 3-10 flowers; corolla-lobes white, ciliate; segments of corona compressed, the outer edge lower than the inner, which has 2 incurved teeth; follicles shaped as in the preceding species, but glabrous and bearing many soft spines.

Roadsides and gullies, Mount Lofty Range. –Nov.-Feb. - -South Africa and Mediterranean region. Mentioned by Allan Cunningham in 1817 as having been introduced into New South Wales several years before. Both species are popularly called *Cotton Bush* in South Australia, on account of the tufted seeds.

Family 33.—GENTIANACEÆ.

1. ERYTHRÆA, Borckhausen.

(Greek *erythros*, red; colour of the flowers.)

1. **Erythræa Centaurium,** Pers. *Common Centaury.* Small glabrous annual; stem erect, quadrangular, branching above; radical leaves, broad-oval, withering early, stem-leaves opposite, broad to narrow-oblong, 3-5 nerved; flowers usually numerous, subsessile, in dense or loose dichotonous corymbose cymes; calyx divided nearly to the base into 5 linear-lanceolate segments; corolla with 5 oval spreading lobes shorter than the tube; stamens 5; style 1, deciduous, shortly bifid at summit; capsule cylindrical, opening in 2 valves, as long as, or longer than, the calyx; seeds numerous, small, wrinkled. Some dwarf forms have the inflorescence reduced to a single flower.

Adelaide plains and Mount Lofty Range. — Nov. - Feb. — Europe; western Asia.

Erythræa Centaurium.

Family 34.—

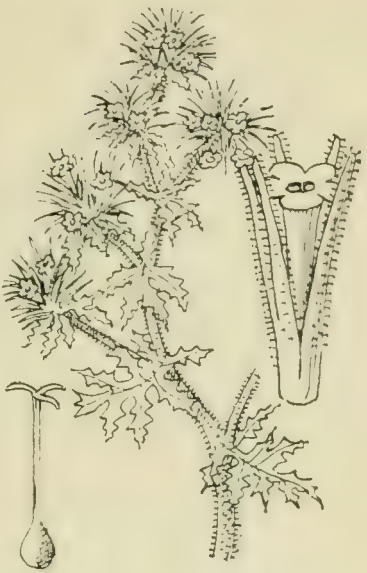
POLEMONIACEÆ.

1. GILIA, Cavanilles.

(After F. S. Gil, a Spanish botanist.)

1. **Gilia squarrosa,** Hooker and Arnott. Branching annual, covered with glandular-sticky hairs; leaves pinnatisect with incised, pungent-pointed segments, upper leaves simpler; flowers small, pale-blue, in dense heads surrounded by leafy bracts; calyx divided almost to base into 5 awlshaped segments, longer than the corolla, which has a funnel-shaped tube and spreading limb of 5 oval lobes.

Established in New South Wales and Victoria, and has appeared in the South-East.—Oct.-Dec.—California, Oregon.



Gilia squarrosa.

Family 35. **CONVOLVULACEÆ.**

1. CUSCUTA, L.

Parasitic, twining, annual herbs, without leaves, and clinging to other plants by suckers on stem; calyx and corolla 4-5-lobed; corolla-tube broad, with 4-5 small scales inside; stamens 4-5; capsule globular, 2-celled, 4-seeded.

Cuscuta Epithymum.

Scales large, closing the corolla tube	*C. Epithymum* 1
Scales small, not closing the tube	*C. europæa* 2

1. **Cuscuta Epithymum,** L. *Lesser Dodder.* Flowers small, sessile, in globular clusters; calyx with acuminate lobes; corolla with acute lobes as long as its tube, which is closed inside by the connivent, fringed scales; styles 2, longer than the ovary.

Living on lucerne and other plants. — Oct.-Dec. — Europe; Asia.

2. **C. europæa,** L. *Greater Dodder.* Flower-clusters larger; calyx and corolla with blunt, oval lobes; scales appressed against corolla-tube and not closing it; styles shorter than ovary.

Living on other herbs.—Oct.-Dec.—Europe; temperate Asia.

Family 36.—BORAGINACEÆ.

Calyx persistant, of 5 divisions; corolla 5-lobed; stamens 5, alternate with the corolla-lobes; ovary 2- or 4-lobed at summit, with a simple style rising from between the lobes; fruit of 4 bony 1-seeded carpels (or fewer by abortion), or of two 2-seeded carpels, either attached to a flat receptacle or to a central axis rising from the receptacle and forming the base of the style. Herbaceous plants, usually rough-hairy; leaves alternate; flowers in 1-sided spikes or racemes which are rolled backwards *(scorpioid)* when young.

Flowers without bracts; corolla small, funnel-shaped.
- Flowers yellow, without folds; stigma small — *Amsinckia* 1
- Flowers white or lilac, with a fold between each lobe; stigma large, conical ... ... — *Heliotropium* 2

Flowers with bracts; carpels free.
- Corolla campanulate with unequal lobes ... — *Echium* 3
- Corolla funnel-shaped, with equal spreading lobes ... ... — *Lithospermum* 4

1. Amsinckia, Lehm.

(After a friend of the author named Amsinck.)

1. **Amsinckia angustifolia,** Lehm. Rough-villous annual with erect stems branching near summit; leaves long, linear-lanceolate; flowers very small, yellow, subsessile, in spikes which become long and loose in fruit; calyx divided almost to the base into 5 erect, linear lobes; corolla glabrous inside, with a tube as long as the calyx and 5 rounded lobes much shorter than the tube; anthers with short filaments, attached above the middle of the corolla-tube; stigma notched, carpels ovoid, subquadrangular, wrinkled-tuberculate on the outer face, smooth on the inner face and attached to the conical receptacle by the lower part of their inner angles.

Grange Railway.—Sept.-Dec.—Chili; naturalised in southern Europe.

Amsinckia angustifolia.

2. Heliotropium, L.

(Greek *hêlios*, the sun, and *trepô*, I turn; the ancients believed that the 1-sided spikes turned towards the sun.)

Calyx deeply cut into 5 lobes; corolla with a cylindrical tube and 5 blunt, spreading lobes, folded in bud; stamens enclosed; style short or none, with a conical stigma; carpels attached obliquely to the receptacle by their base. Flowers sessile in dense, bractless spikes which are usually forked.

Flowers white; carpels 4.
Carpels wrinkled, glabrous ... ... *H. europæum* 1
Carpels smooth, downy ... ... *H. lasiocarpum* 2
Flowers lilac; carpels 2 ... ... *H. anchusæfolium* 3

1. **Heliotropium europæum,** L. *European Heliotrope.* Branching annual, downy with rather stiff hairs and with a slender tap-root; leaves stalked, oval, greyish-green on both sides, the nerves prominent below; flowers white; peduncle bearing 1-4 spikes; calyx villous, as long as corolla-tube, persisting after the fall of the fruit; corolla-lobes separated by short teeth, tube glabrous inside; stigma conical, notched at summit and longer than the style; fruit subglobular, carpels 4, ovoid, subtriangular, tuberculate, downy or glabrous; receptacle convex.

Heliotropium europæum.

Cultivated ground and waste places in settled districts.—Nearly all the year. Mediterranean region.

The far-northern native plant described as *H. europæum* in *Fl. Aust.* IV., 394, is distinguished by some botanists as *H. Eichwaldii*, Steudel, a species also found in India, and characterised by almost smooth, glabrous carpels.

2. **H. lasiocarpum,** Fischer and Meyer. Scarcely differs from the preceding, except in its smooth, downy carpels. Sometimes considered a variety of *H. Eichwaldii*, and all 3 species are very closely allied.

Beside River Torrens, near Adelaide.—Most of the year.—Western Asia and India.

3. **H. anchusæfolium,** Poiret. Villous, strong-smelling perennial, with ascending stems, woody at base;

leaves soft, wavy on the edges, oblong-lanceolate (var. *angustifolium*, DC.), wrinkled transversely below; flowers lilac; peduncle bearing 3-8 spikes; calyx glandular-hairy, shorter than the corolla-tube, which is yellow and has 5 longitudinal rows of hairs inside; stigma sessile, broadly conical, hairy, with a fleshy ring at base; fruit compressed-globular, drupelike, shorter than the enlarged calyx, carpels 2, smooth, glabrous, each normally with 2 seeds; receptacle almost flat. *Tournefortia heliotropioides*, Hooker.

Occasional near Adelaide. — Nov.-Jan. — Argentina. Flowers like those of garden heliotrope, but have an unpleasant smell.

3. Echium, L.

1. **Echium plantagineum,** L. (including *E. violaceum*, L.). *Plantain-leaved Viper's-bugloss.* Biennial, covered with stiff, spreading hairs seated on tubercles; stems erect or ascending, branched; radical leaves in a rosette, very large, oval, stalked, stem-leaves oval-oblong, the upper ones sessile, acute, widened and cordate at base; flowers large purplish-red, in long racemes, with a bract at the base of each short pedicel, the whole forming a spreading panicle; calyx deeply cut into 5 lanceolate, rough-villous lobes; corolla campanulate, nearly equal in length and breadth, and about 3 times as long as the calyx, with an oblique limb; stamens unequal, anthers purple; style long, bifid; carpels subtriangular, covered with rough tubercles and inserted by their bases on the almost flat receptacle.

Echium plantagineum.

Roadsides, pasture. — Sept.-Dec., sometimes also in winter.— Mediterranean region, extending up the west coast of France to Jersey. Known as *Salvation Jane* in our northern agricultural areas, and as *Blue-weed* or *Paterson's Curse* in New South Wales.

4. Lithospermum, L.

(Greek *lithos*, stone, and *sperma*, seed; alluding to the hard carpels.)

1. **Lithospermum arvense,** L. *Corn Gromwell.* Erect annual, usually branching, covered with white, stiff appressed hairs: leaves 1-nerved, lower ones oblong-

lanceolate, upper ones lanceolate and half-clasping: flowers small, white, in lengthening racemes with leafy bracts at the base of the pedicels; calyx deeply cut into 5 linear-lanceolate lobes, spreading in fruit: corolla funnel-shaped, downy outside and slightly exceeding the calyx, with short, rounded lobes; carpels triangular-conical, attached to the receptacle by their bases.

Pasture and cultivated land. —Aug.-Dec.—Europe, Asia.

Lithospermum arvense.

Family 37.—**SOLANACEÆ.**

Calyx of 5 divisions, persistant at least at the base; corolla with 5 equal lobes, usually folded in bud; stamens 5, alternate with the corolla lobes; style and ovary simple: stigma entire or 2-lobed; fruit a berry or capsule with 2 many-seeded cells. Herbs or woody plants, with alternate leaves.

Fruit a berry; flowers comparatively small.
- Corolla wheelshaped or bellshaped; anthers large, close together.
  - Calyx shorter than fruit; anthers opening in 2 pores at top ... ... SOLANUM 1
  - Calyx enclosing fruit; anthers opening by longitudinal slits ... ... PHYSALIS 2
- Corolla funnel-shaped; anthers small, distant ... ... LYCIUM 3

Fruit a capsule; flowers large.
- Stigma 2-lobed; capsule spiny, 4-valved ... DATURA 4
- Stigma entire; capsule not spiny, 2-valved NICOTIANA 5

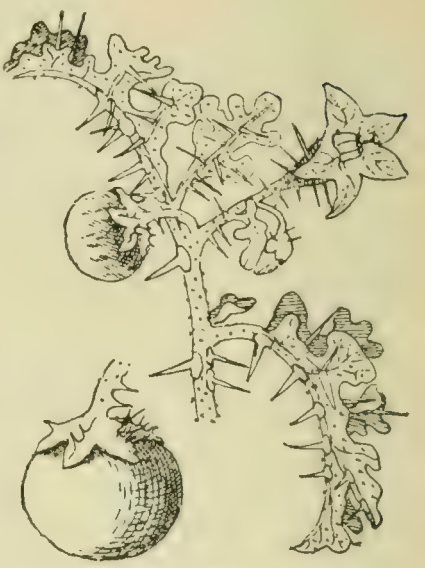
1. SOLANUM, L.

1. **Solanum sodomæum,** L. *Apple of Sodom.* Undershrub with intricate branches, and beset with stout, straight prickles and scattered stellate hairs; leaves shortly stalked, wavy, sinuate-pinnatifid, with rounded lobes and sinuses, green on both sides, lighter below; flowers violet in short racemes, on short thick peduncles, recurved in fruit; calyx prickly, with 5 lanceolate lobes; corolla with a spreading 5-lobed limb, sprinkled with stellate hairs and a very short tube; berry large, depressed-globular, at first white with green stripes, yellow when ripe; pulp acrid.

Pasture and waste places.—Oct.-Apl.—Mediterranean region and South Africa.

S. nigrum, L. (Black Nightshade), an annual with small white, almost umbellate flowers and small black berries, is cosmopolitan, and believed to be indigenous.

S. cinereum, R. Br., resembling *S. sodomæum* in flowers and leaves, except that the latter are white-tomentose below, with weaker spines and smaller globular yellow berries, a native of New South Wales, has appeared near Burnside.



Solanum sodomæum.

2. PHYSALIS, L.

(Greek *physa*, a bladder; alluding to the fruiting calyx.)

Physalis peruviana.

1. **Physalis peruviana,** L. *Cape Gooseberry.* Downy herbaceous perennial; leaves in pairs but not really opposite, petiolate, oval-acuminate, cordate at base, sinuate-toothed or almost entire; flowers solitary, axillary, drooping; fruiting calyx enlarged and bladdery, enclosing the fruit and with 5 connivent teeth; corolla broadly campanulate, pale-yellow, with 5 purple spots near the base; berry globular, yellow, edible.

Beside creeks near Normanville and Yankalilla.—Sept.-Jan.—South America; brought to Sydney in early colonial days from the Cape of Good Hope.

3. LYCIUM, L.

1. **Lycium chinense,** Mill. (including ~~*L. vulgare* and *L. subglobosum*, Dunal~~). *Boxthorn.* Glabrous shrub; somewhat spiny, with long, greyish, flexible, often drooping branches and numerous short branchlets ending in a stout

spine; leaves deciduous, thickish, usually clustered, oboval to oblanceolate, varying much in size; flowers solitary or twin, on long or short pedicels; calyx cylindrical with 5 triangular teeth, becoming hemispherical and deeply 2-lipped in fruit; corolla funnel-shaped, nearly twice the length of the calyx, with a spreading limb and 5 oval lobes, which are deep violet at base and rather shorter than the entire part; corolla-tube with a ring of hairs inside near the middle and a downy tuft on each filament near its base; stamens and style protruding; berry small, subglobular, 10-12 mm. (about ½ in.) long and about as broad, orange-red.

Lycium ~~chinense~~ campanulatum

Cultivated as a hedge and spontaneous in places, especially near the sea.—Varies in certain points from any one described species. Most of the year.—Originally ~~Asiatic.~~ S. African.

Datura Metel.

4. DATURA, L.

1. **Datura Metel,** L. Stout annual, with purplish, downy branches; leaves large, oval, stalked, faintly sinuate, unequal at base, the uppermost ones in pairs; flowers very large, white, solitary, axillary, erect on short peduncles; calyx tubular, downy, 7-8 cm. (about 3 in.) long, breaking off transversely after flowering and leaving the stiff, persistant base below the fruit; corolla about 15 cm. (6 in.) long, funnel-shaped, with a long tube and 5-angled limb; capsule large, globular, downy, drooping on the recurved peduncle and covered with spines.

Cultivated and waste land, Adelaide Plains, especially

near the sea.—Dec. - Mar.—Mediterranean region and India.

D. Stramonium, L. (Thorn Apple), has been proclaimed as a noxious weed, perhaps under a mistaken impression that it was the name of the preceding plant, from which it differs in its sinuate-toothed leaves, shorter corolla (7-10 cm.), and erect, very spiny capsule. A poisonous plant, found in almost all the warmer parts of the globe. I have not seen it in South Australia.

5. Nicotiana, L.

(After Jean Nicot, French ambassador at Lisbon, whence he sent to France seeds of the tobacco plant, *N. tabácum*, L., in 1560.)

1. **Nicotiana glauca,** Graham. *Tobacco-tree.* Tall, erect shrub, sparingly branched, glabrous and glaucous; leaves on long purplish stalks, oval-oblong, acuminate, entire; flowers light-yellow, in a loose panicle; calyx tubular, with short, unequal, lanceolate, ciliate teeth; corolla funnel-shaped, downy, 3-4 cm. (about 1½ in.) long, suddenly contracted near the base and swollen below the very short limb; capsule ovoid, as long as the enlarged calyx which encloses it.

Roadsides, pasture, waste places.—Aug. - Apl.—Argentina, where it is known by its Indian name of *Palán-palán*.

Nicotiana glauca.

Family 38.—SCROPHULARIACEÆ.

Differs from *Solanaceæ* in the irregular corolla, which is either 2-lipped (with the upper lip notched and the lower one 3-lobed), or has 4-5 unequal lobes overlapping in bud, and in the stamens, which are usually 4, in 2 unequal pairs *(didynamous)*, rarely 2 or 5. Herbs with alternate, opposite, or whorled leaves.

Calyx 5-lobed.
- Corolla-tube spurred or pouched at base; throat closed by the projecting palate.
  - Corolla large, pouched ... ... Antirrhinum 1
  - Corolla small, spurred ... ... Linaria 2
- Corolla not pouched or spurred; throat open.

Corolla 2-lipped, stamens 4, glabrous ... MIMULUS 3
Corolla wheelshaped; upper stamens woolly.
Stamens 5 ... ... VERBASCUM 4
Stamens 4 ... ... CELSIA 5
Calyx 4-lobed.
Corolla wheelshaped, 4-lobed; stamens 2 ... VERONICA 6
Corolla tubular, 2-lipped; stamens 4 ... ... BARTSIA 7

1. ANTIRRHINUM, L.

(Greek *anti*, like, and *rhin*, nose or snout; alluding to the shape of the corolla.)

1. **Antirrhinum Orontium,** L. *Lesser Snapdragon.* Erect, slender annual, glandular-hairy in the upper part; leaves lanceolate or linear, tapering at base, the lower opposite, the upper alternate; flowers pink, smaller than the garden Snapdragon (*A. majus*, L.), shortly pedunculate, solitary in the axils of the upper leaves; calyx villous, deeply cut into 5 linear lobes as long as or longer than the calyx; corolla with a wide villous tube and 2 unequal lips, the upper one erect, the lower one with a raised palate closing the throat; capsule obliquely ovoid, hairy, shorter than the calyx, opening at the top in 2 or 3 pores.

Cultivated land.—Aug.-Dec.—Europe; western Asia.

Antirrhinum Orontium.

2. LINARIA, Jussieu.

1. **Linaria Elatine,** Mill. *Pointed Toadflax.* Prostrate, villous annual; leaves mostly alternate, shortly stalked, many of the middle and upper ones hastate, the lower ones broad-oval, usually with a few coarse teeth at base; flowers yellow, with the upper lip purple, solitary on spreading villous or almost glabrous peduncles in almost all the axils; calyx villous with 5 lanceolate lobes; corolla with a conical, curved spur at base; capsule globular, a little shorter than the calyx, opening by 2 circular lids; seeds honeycombed under the lens.

The form usually found near Adelaide is a Mediterranean one, densely villous or woolly, with long, white,

intricate hairs, the peduncles also villous. It is sometimes considered a separate species (*L. Sieberi*, Reichenbach).

Pasture and cultivated land. —Dec. - May.—Europe; western Asia.

Linaria Elatine.

3. Mimulus, L.

(Greek *mimô*, a monkey; alluding to the shape of the corolla.)

1. **Mimulus moschatus,** Douglas. *Musk Mimulus.* Villous, sticky perennial, smelling of musk; stems procumbent, woolly, rooting at base; leaves opposite, all shortly stalked, oval-acute, with small distant teeth; flowers pale-yellow, solitary in the axils of almost all the leaves, on peduncles shorter or longer than the leaves; fruiting-calyx oblong, 5-angled, with 5 lanceolate, unequal teeth; corolla tubular in lower part, 2-lipped, the lower lip with 2 raised, downy, orange lines at the base of its middle lobe; stigma broadly-2-lobed; capsule ovoid, enclosed in the calyx, wrinkled transversely and opening by 2 valves.

Mimulus moschatus.

Mount Lofty Range; in moist places. — Nov. - Jan. — North America; naturalised in parts of Europe.

4. Verbascum, L.

Calyx deeply 5-lobed; corolla with a short tube and a spreading limb of 5 unequal rounded lobes; stamens 5, the 2 lower ones the longest; anthers 1-celled; leaves alternate, the radical ones in a rosette.

Leaves decurrent; flowers in a dense spike ... *V. Thapsus* 1
Leaves not decurrent; flowers in a loose raceme ... ... *V. virgatum* 2

1. **Verbascum Thapsus,** L. *Great Mullein.* Stout, erect, densely white-tomentose biennial; leaves crowded, thick, soft, oval-lanceolate, crenate, decurrent in wings along the stem; flowers yellow, in a long, dense, terminal spike; corolla concave, 15-20 mm. (½-¾ in.) across; the 3 short filaments whitish-woolly, the 2 long ones glabrous or almost so; capsule ovoid.

Waste places in Mount Lofty Range; a garden escape. Oct.-Feb.—Europe and temperate Asia.

2. **V. virgatum,** With. *Twiggy Mullein.* Tall, stiff, erect, glandular-downy biennial; stem simple or branched; leaves oblong-lanceolate, toothed or crenate, the upper ones stem-clasping; flowers yellow, in clusters of 2-4, in the axil of a bract and with 2 bracteoles at the base of the pedicels, or sometimes all solitary in each axil, especially in the upper part of the long, loose raceme or on the side-branches; pedicels shorter than the bracts and calyx; corolla flat, 30-40 mm. (1-1½ in.) across; filaments with purple hairs, capsule globular.

Verbascum virgatum.

All the specimens with solitary flowers which I have seen are lacking in the pedicels longer than bracts, which is the characteristic feature of *V. Blattaria,* L. (Moth Mullein), a closely allied European species which has been reported from some parts of Australia.

Adelaide plains and hills. — Oct.-May. — Western Europe.

5. Celsia, L.

(After Olaus Celsius, a Swedish botanist.)

1. **Celsia cretica,** L. fil. Erect downy biennial, differing from a *Verbascum* only in the number of stamens; stem stout, villous; leaves crenate-toothed, the radical ones stalked, lyrate, the upper ones oblong or oval, stem-clasping; flowers yellow, with purple throat, solitary in the axil of a leafy, oval-acuminate bract, forming a long, dense raceme; calyx large, with oval, saw-toothed segments; corolla flat, about 45 mm. (nearly 2 in.) across; 2 upper stamens purple-woolly, the 2 lower ones much longer and glabrous; capsule large, ovoid.

Norton's Summit; Kangaroo Island.—Oct.-Dec.—Mediterranean region.

6. Veronica, L.

Calyx deeply 4-lobed; corolla wheelshaped with 4 unequal lobes, the upper one the largest; stamens 2, inserted at the base of the upper lobe; capsule 2-valved.

Perennial; flowers in racemes which rise from the leaf-axils ... ... *V. Anagallis* 1
Annual; flowers solitary in the leaf-axils ... *V. hederæfolia* 2

1. **Veronica Anagallis,** L. *Water Speedwell.* Glabrous perennial; rootstock creeping; stems thick, hollow, erect; leaves opposite, stem-clasping, oval-lanceolate or lanceolate, toothed; flowers small, pale-blue, in loose, opposite, axillary racemes; calyx with 4 oblong-lanceolate lobes, a little shorter than the corolla; capsule somewhat compressed, subcircular, notched at the summit, about as long as the calyx.

Swamps near Millicent.—Oct.-Jan.—Europe; Asia; North America.

2. **V. hederæfolia,** L. *Ivy-leaved Speedwell.* Downy annual, with weak prostrate stems; lower leaves opposite, upper alternate, all stalked, circular, 5-7-lobed, the terminal lobe the largest and rounded; flowers small, pale-blue, solitary on axillary peduncles about as long as the leaf, and finally recurved; calyx quadrangular, with 4 triangular, ciliate lobes, cordate at base; capsule subglobular, 4-lobed, containing 2-4 large seeds.

Veronica hederæfolia.

Cultivated ground, Waterfall Gully; Fulham. Aug.-Jan. — Europe; western Asia.

7. Bartsia, L.

(After Dr. J. Bartsch, a friend of Linnæus.)

1. **Bartsia latifolia,** Sibth. Small glandular-hairy annual, with erect, reddish stem, simple or branched; leaves opposite, sessile; lower ones oval, incised, the upper ones palmatifid with 3-7 acute lobes; flowers small, purplish red, in a spike at first dense and ovoid, afterwards lengthening and interrupted at base; calyx tubular, with 4 lanceolate, subequal teeth; corolla persistant, upper lip helmet-shaped, nearly as long as the lower, which has 2

protuberances at the base of the middle lobe; anther-cells mucronate at base; capsule lanceolate, as long as the calyx, opening by 2 valves; seeds minute, ovoid.

Pasture; widely distributed.—Sept.-Nov.—Mediterranean region.

Bartsia latifolia.

Family 39.—**LABIATÆ.**

Flowers irregular; calyx persistant, with 5 or 10 teeth, or 2-lipped; corolla tubular, usually 2-lipped; stamens 4, in pairs, or 2 by abortion; ovary 4-lobed; fruit of 4 dry 1-seeded carpels (as in *Boraginaceæ*); style 1, 2-lobed. Herbs, rarely shrubs, often aromatic; leaves opposite, usually beset with glandular dots containing resinous oil; stems and branches quadrangular; flowers usually in dense clusters, called *false-whorls*, in the axils of the stem-leaves, or of floral leaves reduced to the appearance of bracts.

Corolla with 4 almost equal lobes, not distinctly 2-lipped ... ... MENTHA 1
Corolla with 2 distinct lips.
  Stamens concealed in the corolla-tube.
    Flowers purple; calyx with 5 blunt teeth LAVANDULA 2
    Flowers white; calyx with 10 sharp, curved teeth ... ... MARRUBIUM 3
  Stamens not concealed in the corolla-tube.
    Stamens 2; anthers 1-celled; calyx 2-lipped.
      Filaments surmounted by a simple, lengthened connective ... ... ROSMARINUS 4
      Filaments surmounted by a branched connective, the longer branch bearing the anther ... ... SALVIA 5
    Stamens 4; anthers 2-celled.
      Flowers white; calyx flattened on the back, with 5 unequal teeth; fragrant perennial ... ... MELISSA 6
      Flowers violet; calyx rounded on the back, with 5 equal teeth; non-fragrant plants ... ... STACHYS 7

1. MENTHA, L.

Calyx 5-toothed; corolla funnel-shaped, with the tube enclosed in the calyx, and 4 subequal lobes; stamens 4 equal, erect, distant; anthers with 2 parallel cells; carpels

rounded at the summit. Very fragrant herbs, with small flowers and stolon-bearing rootstocks.

Flowers in cylindrical, terminal spikes (leaves under the whorls reduced to narrow bracts).
Leaves sessile ... ... *M. viridis* 1
Leaves stalked ... ... *M. piperita* 2
Flowers in axillary whorls; hairy plant ... *M. Pulegium* 3

1. **Mentha viridis,** L. *Spear Mint.* Erect perennial, almost glabrous; leaves sessile or almost so, lanceolate or lanceolate-oblong, saw-toothed, green on both sides; flowers very small, white, blotched with lilac, in long spikes, which are at first dense, and afterwards interrupted; bracts linear; calyx campanulate with lanceolate teeth and 5 principal and 6-7 secondary nerves; carpels ovoid, dotted.

Mentha viridis.

Torrens River and creeks in Mount Lofty Range. Jan.-Mar.—Cultivated plant, found wild in many countries.

2. **M. piperita,** L. *Peppermint.* Almost glabrous, like the preceding, but differs in having the leaves stalked and oval-lanceolate; spikes shorter, denser, with larger, lilac flowers; calyx-teeth and bracts ciliate; oilglands prominent on calyx.

Creeks, gullies of Mount Lofty Range.—Jan.-Mar.—A garden plant, believed by some botanists to be a hybrid of *M. viridis* with some other species.

3. **M. Pulegium,** L. *Pennyroyal.* A grey-villous perennial; stems erect or ascending, branching; leaves shortly stalked, oval or nearly circular, sometimes becoming almost glabrous, the upper ones about as long as the whorls; flowers violet, in numerous compact, distant, axillary whorls; calyx tubular, 10-nerved, the throat closed by a dense ring of white hairs, teeth ciliate, the 2 lower narrower than the 3 upper; corolla downy outside; stamens protruding; carpels smooth.

Bridgewater.—Dec.-Apl.—Europe; western Asia.

2. Lavandula, L.

1. **Lavandula Stœchas,** L. *French Lavender.* Low, branching tomentose shrub; leaves linear, grey-

tomentose, with more or less recurved edges, often clustered at the nodes; flowers dark-purple in dense, oblong, quadrangular spikes, surmounted by several large, sterile, violet bracts; bracts (floral leaves) of the spike broadly oboval, somewhat 3-lobed, membranous, veined, 3-flowered; calyx villous, 13-nerved, with the upper tooth clawed and broader than the other 4; corolla 2-lipped, with 5 almost equal spreading lobes.

Pasture: Burnside, Mount Lofty Range.—July-Nov.—Mediterranean region.

Lavandula Stœchas.

3. MARRUBIUM, L.

1. **Marrubium vulgare,** L. *Horehound.* White-tomentose, branching perennial; leaves stalked, circular, irregularly crenate, wrinkled; flowers white, in dense, compact, distant axillary whorls; calyx stellate-hairy, with 10 awlshaped, recurved teeth and a ring of hairs inside at their base; corolla 2-lipped, the upper lip erect, the lower spreading; carpels obovoid, triangular.

Marrubium vulgare.

Roadsides and pasture all over the State.—Sept.-Jan.—Europe; western Asia.

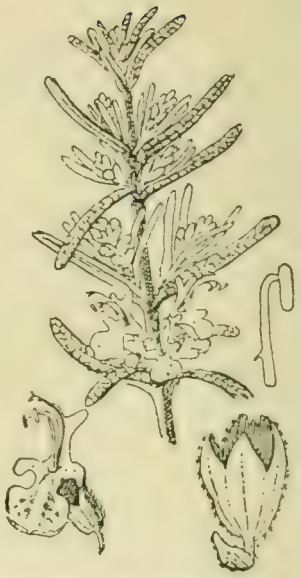
4. ROSMARINUS, L.

(Latin *ros marinus*, sea-dew; grows near the coast in the south of Europe.)

1. **Rosmarinus officinalis,** L. *Rosemary.* Evergreen, branching, aromatic shrub; leaves numerous, linear, green and wrinkled above, with recurved edges, white-tomentose below; flowers white, splashed with violet, in dense axillary and terminal racemes, shorter than the leaves; calyx densely white-tomentose, campanulate, 2-lipped, upper lip oval with 3 minute teeth, lower

lip with 2 lanceolate teeth; upper lip of corolla erect, the lower spreading, the middle lobe concave and very broad; stamens 2, the connective lengthened, continuous with the filament and bearing a 1-celled anther, the junction between filament and connective being indicated by a short tooth.

Cultivated; spontaneous here and there, even in scrubland. July-Sept.—Mediterranean region.



Rosmarinus officinalis.

5. SALVIA, L.

Calyx 2-lipped; corolla 2-lipped, the upper lip arched and helmet-shaped, the lower 3-lobed, with the middle lobe largest; stamens 2, short, filaments surmounted by a lengthened connective of which the longer branch bears a 1-celled anther and the shorter an abortive anther or scale.

Herb; flowers small, blue ... ... *S. Verbenaca* 1
Undershrub; flowers large, bronze-red ... ... *S. aurea* 2

Salvia Verbenaca.

1. **Salvia Verbenaca,** L. *Wild Sage.* Scented perennial herb, with erect, villous stems, simple or branched: leaves oval-oblong, wrinkled, with crenate lobes, the upper ones sessile; flowers small, blue, in distant, 6-flowered whorls, forming a long raceme; bracts circular, acuminate; upper lip of calyx with 3 minute teeth, the 2 lateral teeth connivent, lower lip with 2 lanceolate teeth; corolla from half as long again to twice the length of calyx.

Roadsides and pasture.—All the year.—Europe.

2. **S. aurea,** L. *Golden Salvia.* Undershrub, much branched, densely white-tomentose; leaves shortly stalked almost circular, thick, entire; flowers large, of a reddish-brown resembling bronze, usually 2, sometimes 6 in each whorl, forming a dense raceme;

bracts like the leaves, but smaller; calyx campanulate, villous, both lips broad, notched, becoming enlarged, membranous and veined when in fruit; corolla 3 times as long as the calyx, with a hairy ring inside at the base the lower lip recurved and the middle lobe long and notched; stamens and style protruding.

Brighton Road and sandhills near sea.—Aug.-Oct.—South Africa.

6. Melissa, L.

(Greek *melissa*, a bee; plants visited for their honey.)

1. **Melissa officinalis,** L. *Balm.* Fragrant, branching perennial, villous or almost glabrous; leaves stalked, oval, wrinkled, with broad blunt teeth; flowers white, on short peduncles, in 1-sided, distant, axillary whorls of 6-12; calyx villous, 13-nerved, the upper lip flat, 3-toothed, the lower one bifid; corolla twice as long as calyx, with an arched, swelling tube, upper lip erect, the lower recurved; stamens 4, arched and connivent at summit, the lower pair the longest.

Melissa officinalis.

Near creeks in Mount Lofty Range. — Dec.-Jan. — Mediterranean region; called *Citronnelle* by the French on account of its lemon-like scent.

7. Stachys, L.

(Greek *stachys*, a spike: alluding to the inflorescence.)

Calyx with 5 nearly equal, pointed teeth; corolla tube cylindrical, with a ring of hairs inside, the upper lip erect and helmet-shaped, the lower one spreading, 3-lobed, the middle lobe the largest; stamens 4, the lower pair longer, recurved outwards after flowering; anther-cells so divergent that they are placed end to end and open by a common slit.

Green-villous annual ... ... *S. arvensis* 1
White-woolly perennial ... ... *S. lanata* 2

1. **Stachys arvensis,** L. *Field Stachys.* Rough-villous annual, with weak ascending stems: leaves oval, stalked, truncate or cordate at base, regularly crenate: flowers small, violet, in distant axillary whorls of 4-6;

calyx villous, becoming purple in fruit, with long, lanceolate, ciliate teeth; corolla scarcely exceeding calyx, the lips short: carpels obovoid, tuberculate under the lens.

Roadsides, pastures, cultivated land.—Almost all the year.—Europe; western Asia.

2. **S. lanata,** Jacq. Stout, erect, perennial, covered with a soft, thick, white wool; leaves oval-oblong, acute, stalked, minutely crenate; flowers purple, numerous in each whorl; calyx woolly, with short triangular teeth; upper lip of corolla very woolly outside, the tube as long as the calyx.

Roadsides near Myponga; a garden escape. — Nov.-Jan. — Eastern Europe; western Asia.

Stachys arvensis.

Family 40.—VERBENACEÆ.

Flowers and quadrangular stems as in *Labiatæ*, except that the ovary is simple, not lobed, and the corolla less markedly 2-lipped; fruit enclosed in the persistant calyx, with 1 seed in each cell; leaves opposite.

1. Verbena, L.

Stamens enclosed in the corolla tube; fruit dry, of 4 carpels, separating at maturity.

Perennial; leaves narrow, toothed.
Corolla-tube slightly exceeding calyx ... *V. bonariensis* 1
Corolla-tube 3 times as long as calyx ... *V. venosa* 2
Annual; leaves broad, deeply lobed ... ... *V. supina* 3

1. **Verbena bonariensis,** L. Tall, erect, rough-hairy, herbaceous perennial, with rigid sharply angled stems: leaves linear, sessile, stem-clasping, sharply toothed in the upper half; flowers small, bluish, in dense, terminal spikes on long peduncles, forming a trichotomous panicle: bracts lanceolate, ciliate, equalling or slightly exceeding the calyx, which has 5 lanceolate teeth: corolla shortly villous outside, the tube a little longer than the calyx, with 5 blunt, subequal, spreading lobes; carpels subcylindrical, smooth on the back, white-tuberculate on the face.

Roadsides and pastures in Mount Lofty Range. Dec.-Feb.—Temperate South America. The specific name means "of Buenos Aires."

2. **V. venosa,** Gillies and Hooker. A smaller plant than the preceding, rough-hairy, with slender, ascending

stems; leaves oblong, sessile, half-clasping, rigid, with distant spreading teeth and prominent nerves below; bracts longer than the 5-toothed calyx; corolla bluish, the tube slender, about 3 times as long as calyx.

Waterfall Gully.—Nov.-Dec.—Temperate South America.

3. **V. supina,** L. Annual, rough with appressed hairs or almost glabrous; stems branched, ascending or procumbent; leaves stiff, sometimes in whorls of 3; stalked, oval in outline, wedge-shaped at base, bipinnatifid with blunt lobes; flowers small, lilac, in terminal spikes; bracts broad-lanceolate, half as long as the calyx, which is 4-angled, rough-hairy, with 4 minute teeth; corolla with 5 spreading lobes, the tube slightly exceeding the calyx, bent, swollen and downy about the middle, with a ring of hairs in the throat; carpels with a blunt keel on the back, and transversely wrinkled near the top.

Roadsides, Adelaide plains.—Oct.-Apl.—Mediterranean region.

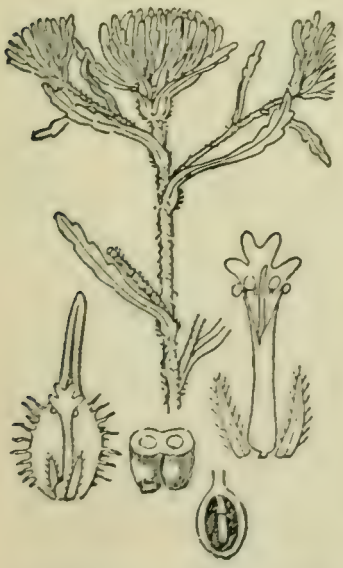
Verbena supina.

Family 41.—**SELAGINACEÆ.**

Flowers irregular; calyx divided into 2 sepals; stamens 4, in pairs, inserted at the summit of the corolla-tube; anthers 1-celled; ovary simple, 2-celled, with 1 hanging ovule in each cell; style undivided; fruit dry, separating into two 1-seeded carpels.

1. Dischisma, Choisy.

1. **Dischisma capitatum,** Choisy. A small annual, white-woolly on the young parts; stems ascending, simple or branched; leaves linear, blunt, ciliate at base, and with a few blunt teeth near the top; lower leaves opposite, upper alternate; flowers small, white, in ovoid, terminal spikes, each flower within a floral leaf or bract resembling the stem-leaves, but with a broad, ciliate base as long



Dischisma capitatum.

as the corolla; sepals 2, one on each side of the corolla and not half its length, linear-lanceolate, ciliate, white and resembling bracteoles; corolla narrow, slit downwards for half its length so as to become 1-lipped, the lip 4-lobed.

Sandy land near Grange Railway.—Aug.-Oct.—S. Africa.

Family 42.—**PLANTAGINACEÆ.**

1. Plantago, L.

Calyx divided into 4 sepals; corolla scarious, 4-lobed; stamens 4, protruding, alternate with the corolla-lobes; style simple; fruit capsular, membranous, 2-4-celled, opening circularly near the base. Flowers in dense spikes at the top of long, stiff, leafless peduncles.

Leaves oval or lanceolate.
  Leaves oval; capsule with 8-16 seeds ... *P. major* 1
  Leaves lanceolate; capsule with 2 seeds ... *P. lanceolata* 2
Leaves linear-pinnatifid ... ... *P. Coronopus* 3

1. **Plantago major,** L. *Greater Plantain.* Perennial with a short, thick rootstock; leaves in a radical rosette, thick, oval, toothed or entire, 5-9-nerved, on long, somewhat winged stalks; flowers in slender, cylindrical spikes, 3-20 cm. (1½-8 in.) long, rather loose at the base, on striate peduncles equalling or exceeding the leaves; bracts bluntly oval, about half the length of the oval sepals, and, like them, green on the back and scarious at the edges; corolla-lobes oval; capsule 2-celled, with 4-8 angular seeds in each cell.

Near Torrens and Onkaparinga Rivers, and in gullies.—Oct.-Apl.—Europe; Asia.

2. **P. lanceolata,** L. *Ribgrass.* Perennial with a short, thick rootstock, woolly about the base of the leaves; leaves radical, lanceolate-acuminate, tapering into a stalk, usually with 5 conspicuous ribs; flowers in spikes at first oval-oblong, finally almost cylindrical, 3-7 cm. (1¼-3 in.) long; peduncles angular, furrowed, longer than the leaves; bracts oval, longer than the sepals, which are keeled, more or less hairy on the back, the 2 lower ones usually united to near the summit; corolla whitish, with oval lobes; capsule 2-celled, with 1 brown shining, oblong seed, channeled on the inner face, in each cell.

Roadsides, pasture, gullies.—Oct.-Jan.—Europe; Asia.

Plantago lanceolata.

3. **P. Coronopus,** L. *Buck's-horn Plantain.* Villous annual or biennial; leaves spreading in a radical rosette, linear and pinnatifid, with long, linear-lanceolate lobes; spikes slender, cylindrical, sometimes 8 cm. (over 3 in.) long; peduncles softly villous with appressed white hairs, about as long as the leaves; bracts oval-acuminate, as long as the sepals; 2 upper sepals concave, with a scarious, ciliate wing on the back, the 2 lower ones ciliate on the outer edge; corolla brownish, with acute lobes and downy tube; capsule usually 3-celled, with 1 winged seed in each cell.

Grange Road and Cheltenham.—Oct.-Feb.—Europe; western Asia.

Class 4.—MONOCHLAMYDEÆ.

Flowers with 1 floral envelope *(perianth)*; all the segments herbaceous and resembling a calyx, or colored like petals, or scarious, or sometimes wanting.

Family 43.—CHENOPODIACEÆ.

1. Chenopodium, L.

(Greek *khên*, a goose, and *pous*, foot; alluding to the shape of the leaves.)

Perianth herbaceous, usually of 5 segments or sepals; stamens usually 5 inserted at the base of the perianth, opposite the segments; styles 2-3; fruit indehiscent, enclosed in the persistant perianth, and consisting of a membranous pericarp, separable or inseparable from the single seed, which is depressed-globular in shape, with the embryo coiled in a circle round the albumen. Mostly herbs; flowers without bracts; leaves stalked, alternate.

Leaves green on both sides, coarsely toothed *C. murale* 1
Leaves mealy below, sinuate-toothed.
Prostrate fleshy-leaved plant ... ... *C. glaucum* 2
Erect thin-leaved plant ... ... *C. album* 3

1. **Chenopodium murale,** L. *Nettle-leaved Goosefoot.* Annual, mealy on young parts and inflorescence; stems erect or ascending, much-branched, reddish, angular; leaves rather thick, green on both sides, or sometimes slightly mealy below, lower ones broadly oval-rhomboidal, upper ones lanceolate, all coarsely, irregularly and sharply toothed except along the base; flower-clusters green, finally red, in slender, leafless, spreading, branched spikes, forming loose axillary and terminal panicles, leafy near the base; perianth concealing the fruit, segments keeled; stamens 5; seed horizontal, dull-black, dotted, with a sharply keeled edge.

Roadsides and waste places in town and country.—Aug.-Apl.—Almost cosmopolitan.

Chenopodium murale.

2. **C. glaucum,** L. *Glaucous Goosefoot.* Prostrate or ascending annual with striate, reddish stems; leaves rather small, succulent, green above, mealy-white below, oval-oblong, blunt, sinuate-toothed, with short, unequal, distant teeth; flower-clusters almost glabrous, in axillary spikes shorter than the leaves and in terminal spikes interspersed with small leaves near the base; perianth closing over, but not quite concealing the fruit; segments mostly 3-4, with a faint keel which is thickened in fruit; stamen 1; seeds horizontal, rarely vertical, smooth and shining after the greenish pericarp is removed, and with a blunt edge.

Salt lands near the sea, Adelaide; Kangaroo Island.—Nov.-Apl.—Europe; Asia.

3. **C. album,** L. *White Goosefoot.* Annual, 1-2 m. (3-6 ft.) high, with an erect, angular, red-striped stem, branching almost from the base; leaves more or less mealy, especially below, oval-rhomboidal, irregularly sinuate-toothed except along the base, uppermost leaves lanceolate, almost entire; flower-clusters mealy, reddening in fruit, in short, dense spikes, forming very long, narrow, axillary and terminal panicles, leafy towards the base; perianth segments thickened, keeled and concealing the fruit; stamens 5; seed horizontal, shining-black after the pericarp is removed, and with a blunt edge.

Our commonest form is tall, with very loose panicles, acute leaves, sometimes almost 3-lobed and always white-mealy below; another form is shorter, with denser panicles and short, broad, blunt leaves (like those of *C. opulifolium*, Schrad.), but the seed is always smooth and shining, although without the sharply keeled edge which is usually considered characteristic of *C. album.*

Waste places and cultivated land.—Nov.-Aug.—Almost cosmopolitan.

Family 44.—AMARANTACEÆ.

1. Amarantus, L.

Flowers monœcious, small, with 1 scarious bract and usually 1-2 bracteoles at base; perianth of 3 or 5 scarious

segments, usually with a green central nerve; styles 2-3, persistant on the fruit, which is membranous, with a separable pericarp; seed solitary, depressed-globular, vertical, shining-black. Herbs, with alternate, stalked leaves.

Fruit wrinkled, indehiscent; perianth-segments 3 ... ... *A. viridis* 1
Fruit smooth, opening transversely; perianth-segments 5 ... ... *A. retroflexus* 2

1. **Amarantus viridis,** L. *Green Amaranth.* Almost glabrous annual; stem stout, erect, often striped with purple, branching from base; leaves pale-green, lighter below, oval or oval-oblong, blunt at base and blunt or notched at top; flowers green, in slender interrupted spikes, lower spikes axillary, upper ones forming a loose, terminal, leafless panicle; perianth-segments 3; oval-acuminate, twice as long as the oval bracts; stamens 3; fruit wrinkled, indehiscent, exceeding the perianth.

Amarantus viridis.

Waste and cultivated land.—Jan.-Mar.—Warm parts of Asia.

2. **A. retroflexus,** L. Downy annual with thick, erect, furrowed stem; leaves pale-green, often suffused with red, oval or lanceolate; flowers greenish in thick dense spikes, axillary and in a long terminal panicle; bracts awned and spreading, so as to give the spikes a bristly appearance, slightly exceeding or nearly twice as long as the 5 perianth-segments, which are oblong-lanceolate, or sometimes blunt and mucronate at the top; stamens 5; fruit almost smooth, opening by a lid, rather shorter than the perianth.

Cultivated land.—Dec.-Mar.—Temperate regions of the globe.

A. caudatus, L. (Love-lies-bleeding), a stout garden annual, with large, bright-green leaves and long, drooping panicles of red flowers, arranged in slender spikes, is found here and there as an escape.—India.

Family 45.—POLYGONACEÆ.

Perianth persistant, of 5-6 segments; stamens 4-8, inserted at the base of the perianth; styles or style-branches 2-3; fruit small, dry, resembling a seed, indehiscent, enclosed in the perianth, 1-celled with 1 erect seed. Mostly

herbs, with simple, alternate leaves, and thin membranous stipules forming a sheath round the stem.

Perianth-segments 6, unequal, the 3 inner ones closing over the fruit; styles, 3, with fringed stigmas.
  Three outer segments small, 3 inner ones large ... ... RUMEX 1
  Three outer segments spiny, 3 inner ones small ... ... EMEX 2
Perianth-segments 5, subequal ... ... POLYGONUM 3

1. RUMEX, L.

Perianth-segments 6, herbaceous; stamens 6; fruit 3-angled, free from, but covered by the enlarged inner segments of the perianth, which resemble the valves of a capsule; flowers in false-whorls, forming long racemes or panicles.

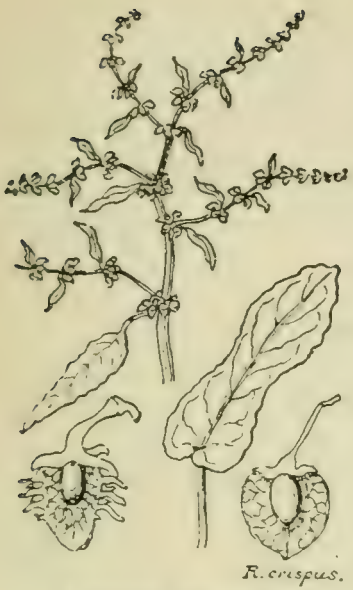
Leaves hastate; flowers unisexual ... ... *R. Acetosella* 1
Leaves not hastate, usually rounded at base; flowers bisexual.
  Fruiting valves with long teeth ... ... *R. pulcher* 2
  Fruiting valves entire or scarcely toothed.
    Valves oblong; panicle loose ... ... *R. conglomeratus* 3
    Valves almost circular; panicle dense ... *R. crispus* 4

1. **Rumex Acetosella,** L. *Sheep-sorrel.* Slender perennial, acid in taste, with creeping rootstock; leaves all stalked, oblong, usually hastate, auricles spreading, sometimes divided twice or thrice at base; stipules silvery-white; flowers small, the 2 sexes on different plants, in slender panicles; outer fruiting segments erect, the valves scarcely as long as the fruit.

Rumex Acetosella.

Roadsides, pastures.—Sept.-Nov.—Temperate regions of the globe.

2. **R. pulcher,** L. *Fiddle Dock.* Biennial or perennial, with erect stem and numerous stiff branches, spreading almost horizontally; leaves stalked, the radical ones oblong-cordate and often contracted in the centre like a fiddle; whorls distant, in long, loose, somewhat leafy racemes; pedicel jointed near the base, a little shorter than the fruiting valves, which are oval-triangular, usually all



Rumex pulcher.

3 bearing an oblong tubercle, or 2 with undeveloped tubercles, netveined and bordered by stiff lanceolate teeth.

Roadsides and waste places.—Oct. - Dec.—Europe; western Asia.

3. **R. conglomeratus,** Murray. *Clustered Dock.* Erect perennial, with spreading-ascending branches; lower leaves oblong-lanceolate, wavy on the edges; whorls distant, in long, leafy racemes, forming a loose panicle; fruiting valves oblong-oval, entire, each bearing an ovoid tubercle.

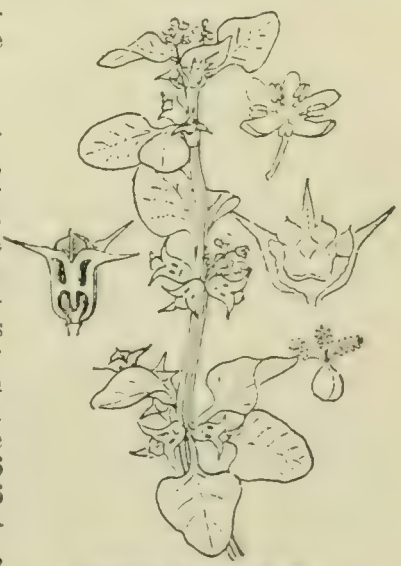
Roadsides, gullies, preferring moist places.—Oct.-Dec.—Temperate parts of the globe.

4. **R. crispus,** L. *Curled Dock.* Perennial with a stout erect stem and short erect branches; leaves minutely waved on the edges, the lower ones oblong-lanceolate; whorls many-flowered, close together, leafy only towards the base and forming a long dense panicle; pedicels longer than the fruiting valves, which are broad-oval, cordate at base, entire, netveined, often only one of the 3 bearing a fully developed tubercle.

Roadsides, waste places.—Nov.-Jan.—Temperate regions of the globe.

2. Emex, Necker.

1. **Emex australis,** Steinheil. Glabrous annual, with thick, prostrate or ascending, branching stems; leaves long-stalked, broad-oval, truncate or cordate at base, thin, wavy on the edges, the stipular sheath soon rupturing and disappearing; flowers monœcious, in leafy, axillary false-whorls, the male flowers in a short raceme rising from among the subsessile female flowers; male perianth of 5-6 equal, oblong segments with 4-6 stamens, female perianth enlarged and hardened in fruit, with a triangular tube and 6



Emex australis.

lobes, the 3 outer terminating in a rigid, spreading spine, the 3 inner smaller, oval, closing over the fruit.

Roadsides, waste places, sandhills.—Almost all the year.—South Africa. The fruit forms a larger and fiercer *Prickly-jack* than the *Tribulus terrestris* of the Far North.

3. Polygonum, L.

(Greek *polys*, many, and *gony*, a knee; the stems have many nodes.)

Perianth segments usually 5, almost equal; stamens 5-8; fruit enclosed in the persistant perianth.

Leaves lanceolate; stems prostrate ... ... *P. aviculare* 1
Leaves arrow-shaped; stems climbing ... *P. Convolvulus* 2

1. **Polygonum aviculare,** L. *Wireweed*, *Hogweed* (Australia); *Knotweed* (England). Glabrous annual, with long, stiff, wiry stems, prostrate in open ground; leaves oblong-lanceolate; stipules long, white-scarious, torn at summit; flowers small, white or pink, axillary, solitary or 2-4 together; styles 3; fruit 3-angled, reddish-black, dull, minutely tuberculate under the lens, as long as the perianth.

Polygonum aviculare.

Cultivated and waste places.—Nov.-May.—Cosmopolitan.

2. **P. Convolvulus,** L. *Black Bindweed.* Glabrous annual with slender climbing stems; leaves arrow-shaped or cordate, acuminate, on long stalks; stipules short, truncate; flowers whitish in small axillary clusters and loose terminal racemes; anthers violet; styles 3; fruit with 3 sharp angles, dull-black, quite enclosed in the perianth.

Cultivated land.—Dec.-Mar.—Almost cosmopolitan.

P. lapathifolium, L., a cosmopolitan species, native near Mount Gambier and in the Eastern States, has appeared in the Mount Lofty Range near Clarendon. It has prominent truncate stipules, broad-lanceolate leaves tapering into a stalk, glandular-dotted on the underside and ciliate on edges; panicle glandular-rough; styles 2; fruit shining, flat, with concave sides.

Family 46.—**EUPHORBIACEÆ.**

Flowers unisexual; perianth either absent and replaced by an involucre, or of 3-5 divisions, free or united at base; stamens few or numerous; styles 2-3; fruit capsular, with 2-3 carpels *(cocci)*, each containing 1-2 seeds, the carpels separating from each other at maturity, leaving a persistant central axis, and usually opening elastically by 2 valves.

Perianth replaced by a calyx-like involucre, containing 1 female and several male flowers of 1 stamen each; leaves entire or toothed ... ... EUPHORBIA 1
Male and female flowers distinct; stamens numerous; leaves palmatifid ... ... RICINUS 2

1. EUPHORBIA, L.

Male and female flowers united in a small involucre, shaped like a calyx and presenting the appearance of a single bisexual flower; involucre campanulate, with 4-5 teeth, alternate with as many thick, spreading petaloid glands; stamens 8-15, on jointed filaments, intermixed with membranous bracts and surrounding 1 pedicellate female flower; styles 3, usually bifid; capsule hanging out of the involucre and composed of three 1-seeded carpels. Herbs or shrubs containing a bitter milky juice; flowers in umbels, with a whorl of floral leaves at the base of the rays, each ray usually forked several times, with a pair of opposite floral bracts at each fork.

Stem-leaves opposite, large; capsule large ... *E. Lathyris* 1
Stem-leaves alternate or scattered.
  Glands crescent-shaped.
    Annuals.
      Leaves broad, stalked; carpels 2-keeled *E. Peplus* 2
      Leaves narrow, sessile; carpels scarcely keeled ... ... *E. exigua* 3
    Perennials; leaves narrow, sessile.
      Bracts denticulate; carpels smooth ... *E. terracina* 4
      Bracts entire; carpels tuberculate ... *E. segetalis* 5
  Glands almost truncate; umbel of 5-10 rays; undershrub ... ... *E. dendroides* 6

1. **Euphorbia Lathyris,** L. *Caper Spurge.* Glabrous and glaucous biennial, 1 m. (3 ft.) high or more, with a stout, hollow, erect stem; leaves opposite, in 4 regular rows, oblong-lanceolate, all sessile and entire; umbel of 2-5 long rays with oval-lanceolate floral bracts; glands crescent-shaped, with short, blunt horns; capsule rather large, smooth; seeds

net-wrinkled, with a hemispherical caruncle.

Near Delamere.—Nov.-Feb.—Europe; Asia; often cultivated.

2. **E. Peplus,** L. *Petty Spurge.* Small, glabrous, erect or ascending annual, often branching from the base; stem-leaves thin, scattered, oboval, stalked; umbel of 3, rarely 2 rays, usually forked many times; bracts oval, sessile, blunt at base; glands crescent-shaped, with long, sharp horns; capsule small, each carpel with 2 wavy keels on the back; seeds ashy-white, carunculate, with 2 broad furrows on the face and four rows, each of 3-4 dark pits, on the back.

Euphorbia.

Waste and cultivated places.—Aug.-Dec.—Europe; Asia.

3. **E. exigua,** L. *Dwarf Spurge.* Slender, glabrous annual; leaves crowded, sessile, linear; umbel small, of 3-5 forked rays; bracts lanceolate, widened and cordate at base; glands as in the preceding; capsule smooth: seeds 4-angled, tuberculate, carunculate.

Euphorbia terracina.

Waterfall Gully.—Sept.-Dec.—Europe; western Asia.

4. **E. terracina,** L. Glabrous perennial, with numerous erect or ascending stems, sometimes bearing flowering branches below the umbel; leaves linear-lanceolate, firm, denticulate near the top; umbel of 4-5 rays, repeatedly forked; floral leaves broader than those of the stem; bracts broad-oval, denticulate; glands greenish, crescent-shaped, with very long horns; carpels smooth; seeds ovoid, obliquely truncate at summit, smooth, grey, with a large caruncle.

Sandhills near Brighton; grassland, Strathalbyn.—July-Oct.—Mediterranean region.

5. **E. segetalis,** L. Annual or perennial, glabrous and glaucous; stem erect, simple or branching from base, sometimes with flowering branches below the umbel; leaves thin, scattered, spreading, linear or lanceolate, mucronate, the floral ones broad-oval, often contracted near the middle and tapering to the summit; umbel of 5 rays, forked several times; bracts almost semicircular; glands crescent-shaped, yellow, with moderately long horns; carpels tuberculate on back; seed ovoid, ashy-white, dark-pitted all over, with a conical caruncle. Resembles the preceding in habit, but the umbel is usually as long as or longer than the stem, while in *E. terracina* it is shorter than the stem.

Pasture and cultivated land at the foot of Mount Lofty Range.—Most of the year.—Mediterranean region.

6. **E. dendroides,** L. Glabrous undershrub with thick spreading branches, leafless below; leaves dark-green, thickish, crowded, spreading, oblong-lanceolate; bracts yellowish, broad-oval; umbels of 5-10 rays, once or twice forked; glands orange, truncate or slightly and bluntly crescent-shaped; carpels smooth; seed smooth, obliquely truncate at top, carunculate.

Escaped here and there from gardens.—Aug.-Sept.—Coasts of the Mediterranean.

E. Drummondii, Boissier, a small, prostrate native perennial, with opposite leaves and entire, purplish glands, is a common weed in cultivated fields in the northern areas, and is said to be injurious to cattle and sheep, but recent experiments in the eastern States do not bear out this opinion.

2. Ricinus, L.

(Latin *ricinus*, a tick, which the seeds are supposed to resemble.)

1. **Ricinus communis,** L. *Castor-oil Plant.* Tall spreading shrub, branching from base, the herbaceous parts reddish; leaves dark-green above, large, alternate, peltate, palmately cut into 7-9 oval-lanceolate, saw-toothed lobes; flowers in loose, erect racemes, which are often paniculate by the branching of the peduncles; upper flowers female with 5 perianth-segments more or less cohering, and 3 red, bifid styles; lower flowers male with 5 oval, finally recurved segments and numerous stamens with branching filaments; carpels with more or less rigid spines on

Ricinus communis.

the back; seed oblong, smooth, shining, carunculate, varying in size and in its brown and tawny mottling.

Waste places, gullies, river-banks, sandhills.—Dec.-Mar.—Cultivated in most warm countries for ornament or for the extraction of castor-oil from the seeds. "Probably indigenous in Africa" (J. D. Hooker, *Fl. of Brit. India*).

Family 47.—**URTICACEÆ.**

Plant with stinging hairs; leaves simple; stigma sessile ... ... URTICA 1
Plant without stinging hairs; leaves palmate; style-branches 2, long, filiform ... CANNABIS

1. URTICA, L.

1. **Urtica urens,** L. *Small Nettle.* Erect annual, covered with rigid hairs secreting an irritating fluid; leaves opposite, stalked, oval deeply toothed, stipulate; male and female flowers intermixed in short axillary racemes; male perianth of 4 equal segments, stamens 4; female perianth with the 2 outer segments smaller than the 2 inner, which are ciliate on the edge and have each a long stinging hair on the back; fruit dry, 1-celled, 1-seeded, indehiscent, enclosed in the perianth.

Urtica urens.

Waste and cultivated land.—July-Dec.—Temperate regions of the globe.

Cannabis sativa, L. (Hemp), a strong-smelling annual with leaves palmately divided into 3-7 lanceolate, toothed segments, is sometimes spontaneous in cultivated ground. Flowers diœcious, the males in panicles with a 5-cut perianth and 5 stamens, the females in axillary clusters, with a 1-leaved perianth. Oct.-Dec.—Fibrous plant, probably a native of Central Asia.

Family 48.—**ULMACEÆ.**

1. ULMUS, L.

1. **Ulmus campestris,** L. *Common Elm.* Tree; leaves alternate, shortly stalked, oval, acuminate, unequal at base, doubly toothed, hairy at the base of the lateral nerves on the underside; flowers almost sessile, in clusters, appearing before the leaves; perianth small, reddish, with 4-5 teeth and as many stamens; fruit flat, thin, surrounded by a broad, veined wing, and containing 1 pendulous seed.

The tree usually grown here is var. *suberosa*, Loudon, with corky wings on the branches *(Cork-barked Elm)*.

Cultivated for ornament and often propagating itself by suckers.—July - Sept.—Europe; western Asia.

Ulmus campestris.

Family 49.—**SALICACEÆ.**

Flowers diœcious, solitary in the axils of overlapping bracts, and forming spikes known as *catkins;* style 1; fruit capsular, small, 1-celled, opening from top to base in 2 valves; seeds numerous, minute, with a tuft of long, silky hairs at base. Trees with soft, white wood and alternate, simple, deciduous leaves.

Catkins with jagged scales; perianth an oblique cup; stamens 8-20 ... ... POPULUS 1
Catkins with entire scales; perianth represented by 1-2 glands; stamens 2-5 ... ... SALIX

1. POPULUS, L.

Catkins finally drooping, cylindrical, appearing before the leaves, which are long-stalked.

Leaves lobed or sinuate-toothed, the underside white-tomentose ... ... *P. alba* 1
Leaves finely and regularly toothed, the underside green and glabrous ... ... *P. nigra* 2

Populus alba.

1. **Populus alba,** L. *White Poplar.* Tall tree, with smooth light-colored bark; leaves broad-oval or almost circular, shortly lobed or sinuate-toothed, green above, white-tomentose below, the stalk flattened; catkins with jagged, hairy scales; stamens 8; stigmas 4, in the shape of a cross.

Grown for ornament and frequently spreading by suckers.—July - Aug.—Europe; temperate Asia.

2. **P. nigra,** L. *Black Poplar.* Tall tree with sticky buds; leaves almost triangular, acuminate, crenate-toothed, green on both sides, the stalk flattened at the summit; catkin-scales

glabrous; stamens 12-20. Grown here only in the var. *itálica*, Duroi (*P. fastigiata*, Desf.), *Lombardy Poplar*, in which the erect branches make the tree assume a narrow, conical shape.

Ornamental and spreading by suckers. July - Aug.— Europe; temperate Asia.

Salix babylonica, L. (Weeping Willow), with drooping branches and lanceolate toothed leaves, has been much planted near creeks and along the Murray.—Asia. *S. fragilis*, L. (Brittle Willow), with erect branches and lanceolate leaves glandular-toothed, shining above and glaucous below, with a long point turned to one side, has been planted along creeks and rivers on the Adelaide plains and hills.—Europe. Both grow readily from cuttings, but can scarcely be considered self-propagating.

DIVISION 2.—MONOCOTYLEDONS.

Embryo with 1 cotyledon; stems mostly herbaceous, without wood, pith or bark; leaves simple, usually with sheathing bases, almost always with simple parallel nerves.

Family 50.—**LILIACEÆ.**

Perianth petaloid, of 6 divisions; stamens 6, inserted on the perianth or the receptacle, anthers opening inwards; ovary free; style 1, with an entire or 3-fid stigma; fruit a 3-celled capsule, opening in the middle of the cells *(loculicidally)* by 3 valves, which retain the partition down the middle. Perennial herbs, with a bulbous, tuberous, or fibrous rootstock.

Perianth-segments almost free, spreading.
- Root fibrous; perianth deciduous ... ... Asphodelus 1
- Rootstock bulbous; perianth persistant after fading ... ... Ornithogalum 2

Perianth-segments united in lower part, not spreading.
- Perianth urnshaped; leaves linear, weak ... Muscari 3
- Perianth cylindrical; leaves stiff, succulent, usually broad and toothed ... ... Aloe 4

1. Asphodelus, L.

1. **Asphodelus fistulosus,** L. *Wild Onion.* Roots long, fibrous; stem hollow, usually branching above; leaves all radical, long, cylindrical, striate, hollow; buds pink, flowers white in long racemes; pedicels jointed, with a bract at base; perianth-segments spreading, with a brown, central nerve; filaments encircling the ovary by their broad, concave bases, which are papillose on the back; anthers versatile; stigma 3-lobed; capsule containing 3-6 black,

triangular, wrinkled seeds, the valves notched at top, wrinkled transversely.

A common weed in waste places, roadsides, pastures.—July - Sept.—Mediterranean region.

Asphodelus fistulosus.

2. Ornithogalum, L.

(Greek *ornithos*, a bird, and *gala*, milk; application of name unknown.)

1. **Ornithogalum thyrsoides,** Jacq. Bulb globular, with brown tunic; stem stout, stiff, erect, 15-30 cm. ($\frac{1}{2}$-1 ft.) long; leaves shorter, 4-5, all radical, linear - lanceolate, channeled, fleshy, finely ciliate on edges; flowers pure - white with brownish base, 6-25, in a corymbose raceme; pedicels 1-3 cm. long, spreading-erect, with white - membranous, acuminate bracts; perianth campanulate, segments oblong, 2 cm. ($\frac{3}{4}$ in.) long; alternate stamens longer than the others, with filaments dilated and 2-toothed at base; seeds numerous, black, angular.

Ornithogalum thyrsoides.

Hillsides, Waterfall Gully.—Oct.-Nov.—South Africa.

3. Muscari, Mill.

(Latin *muscus*, on account of the musky smell of *M. moschátum*, an Asiatic species.)

Perianth urnshaped, entire except for the 6 small, spreading-recurved teeth; stamens enclosed in the perianth and inserted in the middle of the tube; capsule 3-angled with compressed valves, each cell containing 1-2 seeds. Bulbous perennial herbs with radical, linear-channeled leaves and flowers in terminal racemes, the uppermost barren.

Raceme becoming long and loose; upper flowers long-stalked, in a showy tuft ... *M. comosum* 1
Raceme short and dense; upper flowers short-stalked ... ... *M. neglectum* 2

1. **Muscari comosum,** Mill. *Tufted Grape Hyacinth.* Leaves 3-4, longer than stem, weak, deeply channeled 10-15 mm. (about ½ in.) broad, rough on the edges; flowers scentless, on pedicels much longer than the fruit, lower ones brownish, horizontal, distant, the uppermost violet-blue, erect, forming a long terminal corymbose cluster; perianth obovoid.

Cultivated fields, roadsides, Adelaide Plains.—Sept. - Nov.—Mediterranean region.

Muscari comosum.

2. **M. neglectum,** Gussone. Leaves 5-16, longer than stem, semi-cylindrical, 3-6 mm. broad; flowers dark - purple, scented, in a dense oblong raceme, on recurved pedicels rather shorter than the fruit; perianth ovoid-oblong.

Cultivated and grass land, Adelaide Plains.—Aug.-Sept.—Mediterranean region.

4. Aloe, L.

Aloe latifolia.

1. **Aloe latifolia,** L. Haw. *Broad-leaved Aloe.* Stem short, thick, and becoming more apparent as the lower leaves perish; leaves spirally arranged in a dense rosette, 20-30 cm. (8-12 in.) long by 5-8 cm. (2-3 in.) broad, oval-lanceolate, thick and fleshy, olive - green to reddish - brown, mottled with oblong white spots in irregular transverse rows and often confluent, bordered by triangular, horny teeth; peduncle stout, erect, simple or forked; flowers vermillion, in a short, dense, terminal raceme; pedicel rather shorter than flower, with a lanceolate, long-pointed bract at base; perianth cylindrical, 40-45 mm. (over 1½ in.) long, narrowed above the ovary, segments united in a tube for more than half their length, scarcely spreading at tip; stamens at-

tached to the receptacle, anthers versatile, enclosed; capsule oblong; seeds numerous with membranous wings.

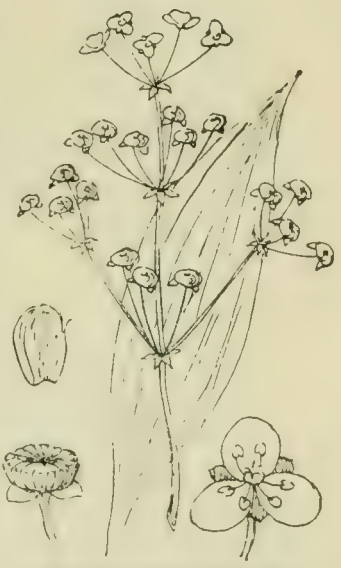
Roadsides near Black Hill; sandhills near Glenelg; spreading by suckers.—Sept.-Jan.—South Africa.

Family 51.—**ALISMACEÆ.**

1. Alisma, L.

1. **Alisma Plantago,** L. *Water Plantain.* A rather tall, erect perennial, with long-stalked, oval-lanceolate radical leaves; flowers small, in distant whorls and terminal umbels, forming a loose pyramidal panicle; 3 outer perianth segments (sepals) herbaceous, persistant, 3 inner twice as long, pale-pink, petaloid; stamens 6; carpels about 20, small, compressed, 1-seeded, seated in a ring on the flat receptacle.

Along the Onkaparinga River and in the Reedbeds.—Jan.-Mar.—Temperate regions of the globe, including eastern Australia. Perhaps introduced recently, or may have been overlooked; not recorded by Tate in *Fl. Extra-trop. S.A.*



Alisma Plantago.

Family 52.—**IRIDACEÆ.**

Perianth petaloid, with 6 divisions, the base of the tube united with the ovary; stamens 3, inserted in the middle of the tube or at the base of and opposite to the 3 outer segments; anthers opening outwards; ovary inferior; style 1, with 3 simple or bifid branches; fruit capsular, with 3 many-seeded cells, opening by 3 valves. When all the anthers are arranged on one side of the style in the open flower, the stamens are termed *unilateral;* when surrounding the style they are *equilateral.* Perennial herbs; leaves either radical, or arranged in 2 rows on each side of the stem and overlapping at base *(equitant);* flowers either fairly permanent, sessile and solitary in a spathe consisting of 2 bracts *(valves),* or quick-fading, pedicellate, and several together in a spathe consisting of 1-2 outer, and as many inner valves as there are flowers; the inner spathe-valves are usually 2-nerved and 2-toothed.

A. Flowers 1 in each spathe; stamens long, unilateral (except in *Romulea, Hesperantha,* and *Ixia).*

B. Leaves swordshaped and equitant on the stem.
C. Perianth-tube long, curved.
Segments equal; style-branches bifid — WATSONIA 1
Segments unequal; style-branches simple ... ...
Tube cylindrical; spathe small, membranous ... ... — ANTHOLYZA 2
Tube funnel-shaped; spathe large, herbaceous ... ... — GLADIOLUS
C. Perianth-tube short, straight, segments spreading; style-branches simple.
Spathe-valves delicate, deeply torn at top ... ... — SPARAXIS 3
Spathe-valves rather stiff, outer one entire or denticulate.
Stamens unilateral; spathe short, partly membranous; style-branches widened at summit.
Hairy plant; perianth-tube rather long ... ... — BABIANA
Glabrous plant; perianth-tube very short ... ... — TRITONIA
Stamens equilateral.
Spathe herbaceous; style-branches awlshaped ... ... — HESPERANTHA
Spathe membranous; style-branches widened at summit — IXIA
B. Leaves linear, usually few and radical.
Perianth-tube long, curved; style-branches simple ... ... — ACIDANTHERA
Perianth-tube short, straight; style-branches bifid ... ... — ROMULEA 4
A. Flowers 2 or more in each spathe; stamens short, opposite to the style-branches and appressed to them.
Style-branches petaloid, ending in 2 erect crests exceeding the stamens.
Inner segments erect; leaves usually swordshaped ... ... — IRIS 5
Inner segments spreading or very small; leaves few, linear ... ... — MOREA 6
Style-branches small, not crested or exceeding the stamens; filaments united in a tube.
Style-branches flattened and slit on the inner side; leaves 1-2, radical, much longer than the stems ... ... — HOMERIA 7
Style-branches bifid and fringed; leaves few, radical, and also on the stem — FERRARIA

1. WATSONIA, Mill.

(After Sir Wm. Watson, M.D., an English Professor of Botany.)

Perianth funnel-shaped, with a long, curved tube and subequal lobes: anthers linear, versatile; style long, slen-

der, with 3 bifid branches; capsule globular. Flowers solitary in the spathe, which has stiff, striate valves; leaves rigid, broadly swordshaped, equitant; corm globular.

Flowers scarlet ... ... *W. angusta* 1
Flowers rose-red ... ... *W. Meriana* 2

1. **Watsonia angusta,** Ker. Stems stiff, erect, 1-2 m. (3-6 ft.) high, usually branched; flowers scarlet, in a long, loose spike; spathe-valves oblong, acute; perianth 5-7 cm. (2-2¾ in.) long, tube cylindrical, widened in the upper half, segments oblong; style as long as perianth.

Moist places on hills and plains near Adelaide: introduced as a garden plant.—Oct.-Dec.—South Africa.

2. **W. Meriana,** Mill. Differs from the preceding in the color of the flowers; style a little shorter and the upper part of the tube rather cylindrical than narrow funnel-shaped.

Same localities.—Great confusion exists in the naming of the cylindrical-tubed species of *Watsonia*.

Watsonia Meriana.

2. Antholyza, L.

(Greek *anthos*, a flower, and *lyssa*, rage; supposed likeness of the flower to the mouth of an angry animal.)

Antholyza æthiopica.

1. **Antholyza æthiopica,** L. Tall, branching perennial, growing from a depressed corm with a fibrous tunic; leaves swordshaped, equitant; flowers solitary in the spathe, red and yellow, in a 2-ranked spike; spathe-valves small, oblong, acute; perianth 5-7 cm. (2-3 in.) long, curved, tube longer than the segments, which are narrow, unequal, the upper one the longest; anthers versatile; style slender, with 3 long, undivided branches; capsule subglobular, beaked, with 2-4 orange-colored seeds to each valve.

Garden plant, wild along creeks. July-Sept. South Africa.

3. Sparaxis, Ker.

(Greek *sparasso*, I tear; alluding to the torn spathes.)

Perianth funnel-shaped with a straight tube and oblong subequal segments; anthers erect; style-branches oblanceolate, undvided; spathe-valves membranous, long and torn at the summit. Flowers 1 in each spathe, arranged in a few-flowered terminal spike; leaves narrow-swordshaped, equitant; stems simple or branched, exceeding the leaves; plants small; corm ovoid or globular, with a fibrous tunic.

Flowers large, variously coloured, with a bright-yellow throat ... ... *S. tricolor* 1
Flowers smaller, without a distinctive colour in the throat ... ... *S. bulbifera* 2

1. **Sparaxis tricolor,** Ker. Perianth 3-4 cm. ($1\frac{1}{4}$-$1\frac{1}{2}$ in.) long; segments bright yellow at base, red, white or rich purple above; spathe-valves streaked with reddish-brown, the outer one 3-toothed.

Garden plant, common in grassland and scrub.—Sept.-Oct. —South Africa.

2. **S. bulbifera,** Ker. Stem bearing one or two leaves with bulbils in the axils; flowers 2, sometimes 1; perianth about 3 cm. long, violet outside, whitish inside (or sometimes yellow in Cape specimens); spathe as in the preceding, but shorter.

Same localities; not so common.—Sept.-Oct.—South Africa.

Sparaxis tricolor.

4. Romulea, Maratti.

(After Romulus, legendary founder of Rome; several species grow in the Roman States.)

Perianth funnel-shaped, with a short tube and subequal segments; stamens enclosed in the perianth, filaments short, hairy; anthers erect; style slender, with 3 bifid branches; capsule membranous, oblong. Flowers solitary in a terminal spathe; leaves radical, narrow-linear, much longer than the peduncles; corm ovoid, covered by a glossy, brown tunic.

Flowers comparatively large, bright purplish, twice as long as the spathe ... ... *R. Bulbocodium* 1
Flowers small, pale violet, slightly exceeding the spathe ... ... *R. Columnæ* 2

1. **R. Bulbocodium,** S. and M. Leaves 5-10, compressed, linear, sometimes 20 cm. (8 in.) long or more, 1-2 mm. broad, with blunt edges and 2 grooves on each side, so that a transverse section resembles a Maltese cross; flowers 2-4, twice as long as the spathe, on peduncles much shorter than the leaves; spathe-valves herbaceous, striate, the upper one with broad, scarious, brown-dotted borders, perianth 15-20 mm. (about ¾ in.), rarely 25 mm. long, segments lanceolate, 3-nerved on back, purplish-pink inside with a yellow base, purplish and green outside, style-branches deeply bifid, slightly shorter than the stamens, which are nearly half as long as the perianth; seeds numerous, angular, dull.

Romulea Bulbocodium.

This is the short-styled form (*R. longifolia*, Baker?) of the South African *R. rosea*, Eeklon, now united by Kew and other authorities with the European *R. Bulbocodium*. I would suggest calling our plant var. *brevistyla*.

Pasture and roadsides.—Sept.-Oct.—Mediterranean region; South Africa. *Onion-grass* in Victoria.

2. **R. Columnæ,** Sebastiani and Mauri. Leaves 5-12, even narrower than in the preceding; flowers 2-4, slightly longer than spathe, on rather short peduncles; spathe-valves membranous, both with brown-spotted edges; perianth 8-10 mm. (under ½ in.) long, pale-violet with a yellow throat, the outer segments green on the back, with purple stripes; stamens three-quarters as long as perianth and slightly exceeding the style, whose branches are shortly bifid: seeds reddish.

Pasture and roadsides.—Aug.-Sept.—Western Europe and Mediterranean region.

5. Iris, L.

(Greek *iris*, rainbow; varied color of the flowers.)

1. **Iris germanica,** L. *German Iris.* Perennial with a long, thick rootstock and swordshaped, equitant leaves shorter than the branching stem; flowers 1-3 in the spathe, large, blue or white; spathe large, inflated, with oblong valves; perianth-tube short, segments equal, broad, the 3 outer spreading-recurved, with a yellow beard running down the midrib for half their length, the 3 inner

segments erect-incurved; anthers erect; style-branches broad, petaloid, terminating in 2 oval lobes, which rise above the anthers and have a transverse stigmatic line at base.

Garden plant, probably hybridised with *I. florentina*, L., or other species; wild in many places on plains and hills.—Sept.-Nov.—Europe; western Asia.

Iris germanica.

6. Moræa, L.

(After Robert Moore, an English botanist of the 18th century.)

Perianth funnel-shaped, almost without a tube, segments subequal, spreading in the upper half; filaments more or less united in a tube around the style; anthers erect, appressed to the style-branches, which terminate in 2 erect petaloid lobes. Flowers pedicellate, 2 or many in each spathe; leaves few, radical; corm with a fibrous tunic.

Inner segments conspicuous; ovary beaked *M. xerospatha* 1
Inner segments very small; ovary not beaked *M. Pavonia* 2

Moræa xerospatha.

1. **Moræa xerospatha,** MacOwan. Dwarf plant, leaf 1, rather stiff, flat, narrow-linear, 25-70 cm. (10-27 in.) long, and several times longer than stem; flowers like a minute Iris, 4-6 in each spathe; spathes 3-4, cylindrical, about 25 mm. (1 in.) long, sessile on a short stiff stem, valves white-scarious, the outer ones with 6-9 prominent nerves; perianth-segments subequal, 15-18 mm. (nearly $\frac{3}{4}$ in.) long, oblong-lanceolate, the upper half lilac, with an orange blotch at base, the latter color, mixed with purple spots, running down the claw; style-branches bifid for half their length, lobes scarious, lanceolate-acuminate; ovary with a slender beak as long as itself; capsule cylindrical, delicately membranous, crowned by the

persistant beak, containing many lustreless, brown, angular seeds.

This determination was made by Professor MacOwan himself, on specimens forwarded to Capetown. The South Australian plant does not, however, agree with Baker's description (*Fl. Cap.* vi. 529), even as to the number of leaves. When the discrepancies were pointed out to the authorities of the Cape Government Herbarium, they expressed the opinion that the errors arose from Baker having lost MacOwan's description of the plant, and redescribed it from dried specimens.

Numerous on roadsides and in pasture, Adelaide Plains.—Sept.-Nov.—South Africa (environs of Capetown).

2. **M. Pavonia,** Ker. Stem tall, slender, with 1 long, linear leaf; flowers 2-3 in each spathe; spathes cylindrical, about 5 cm. (2 in.) long, on a long peduncle, with sheathing bract at base, valves scarious at top and long-pointed; 3 outer perianth-segments pale-yellow, brown-streaked and villous on claw (var. *lutea*, Baker), nearly thrice as long as the narrow-wedgeshaped inner segments, which are 3-toothed at summit, the middle tooth longest; capsule brown, leathery, club-shaped.

Hill above Waterfall Gully Road. — Sept. - Nov. — South Africa.

Moræa Pavonia.

7. Homeria, Ventenat.

Perianth funnel-shaped with a very short tube and sub-equal spreading segments: filaments completely united in a tube round the style: anthers linear, appressed to the style-branches, which are short, compressed, 2-lipped, and slit on the inner lip, truncate-papillose at summit: capsule long, clubshaped. Flowers pediceliate, 2-4 in each spathe: spathes cylindrical, on erect peduncles, which are terminal or rise from short branches, enclosed in sheathing bracts; leaves few, radical: corm globular, with thick, brown tunic.

Leaf 1 ... ... *H. collina* 1
Leaves 2 ... ... *H. miniata* 2

1. **Homeria collina,** Vent. *One-leaved Cape Tulip.* Stem stiff, zigzag, angular, simple: leaf 1, grass-like, linear, stiffish, ribbed, much longer than the stem and sometimes attaining 90 cm. (3 ft.): spathe-valves

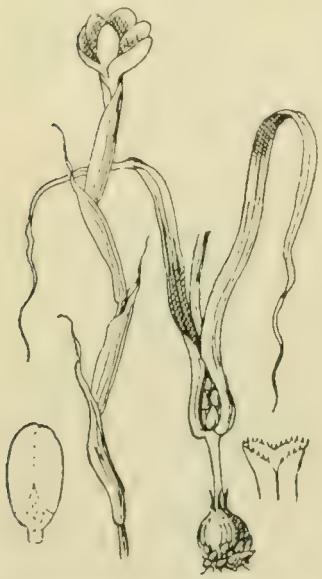
unequal, the 2 outer ones greenish, stiff, striate, with long scarious points, the inner ones membranous; perianth-segments 30-40 mm. (about 1½ in.) long, blunt, red or pink, with a green and yellow base. A yellow-flowered form is also found here (var. *ochroleuca*, Baker).

Pasture, Adelaide plains and hills; poisonous to cattle.—Aug.-Nov.—South Africa.

Homeria collina.

2. **H. miniata,** Sweet. *Two-leaved Cape Tulip.* Very like the preceding, but the leaves are 2, and usually bear bulbils in their axils; outer spathe-valves with still longer points; perianth-segments 20-25 mm. (¾-1 in.) long, salmon-pink, with a yellow base, blotched with green.

Same localities, and more or less poisonous. — Sept. - Oct. — South Africa.



Homeria miniata.

The following South African species are found growing spontaneously, but so localised that they can scarcely be said to have established themselves: —

Gladiolus blandus, Aiton. Stem erect, bearing a spike of 2-6 large flowers, white or pink, and exceeding the 3 or 4 swordshaped leaves; perianth-tube 3 cm. long, upper segment erect and longer than the others, the 3 lower ones oblong, pointed, spreading, and with a red blotch in the centre; spathe green, longer than the tube. — Waterfall Gully. — Oct.-Nov. *G. cuspidatus*, Jacq. Flowers large, greenish-white, 4-8 in a loose, 1-sided spike, exceeding the rigid, swordshaped leaves; perianth-tube 6-7 cm. long, slender, much exceeding the green lanceolate spathe, segments oblong, narrowed into long, wavy recurved points, the 3 lower ones sometimes with a purple mark. Along creek near Normanville.—Oct.-Dec.

Babiana stricta, Ker. Dwarf cormous plant, villous all over; stem bearing a spike of 2-6 showy flowers which exceed the swordshaped leaves with 5-6 prominent plaited nerves; perianth from red to lilac, with a slender tube and equal segments; spathe about as long as the cylindrical part of the tube, the outer valve oblong, blunt, striate, the inner bifid, often split to the base; style-branches, short, spoonshaped; ovary villous.—Belair and Blackwood.—Oct.

Tritonia lineata, Ker. Stem erect, bearing about 12 handsome flowers in a loose spike; perianth pale-yellow in South Australian specimens, with 3 parallel longitudinal nerves down the centre of each segment and lateral nerves branching from them; spathe short, outer valve brown and toothed in upper part; style slender with 3 oblanceolate branches exceeding the purple, versatile anthers. -Fourth Creek near Glynde Road. Oct.

Hesperantha falcata, Ker. Stem erect, slender, bearing 3-6 scented flowers in a loose spike; leaves 3-4 broad-linear, straight or sickle-shaped (falcate), almost equitant, much shorter than the stem, which has a sheathing bract about the middle; perianth-tube cylindrical, straight, exceeding the spathe; segments oblong spreading, the 3 inner ones white, the 3 outer brownish-red outside; outer spathe-valve oboval, green, reddish at tip; corm conical with a brown tunic.—Waterfall Gully.—Sept.

Ixia flexuosa, L. Stem erect, slender, bearing many flowers in a dense spike with a zigzag (flexuose) axis; leaves about 4 at base of stem and 2 higher up, broad-linear, flat, long-pointed; perianth-tube straight, slender, exceeding the spathe but shorter than the limb; segments oblong, 12-14 mm. (about ½ in.) long, from almost white to deep lilac; outer spathe-valve scarious, oblong, striate, notched and mucronate at summit, inner valve 2-toothed.—Hillsides, Waterfall Gully.—Oct.-Nov.

Acidanthera platypetala, Baker. Stem erect, slender, bearing 1 large terminal, scented, funnel-shaped flower, and 2-3 awlshaped, distant leaves, the lowest often exceeding the stem; spathe long, cylindrical, herbaceous; perianth yellowish-white, the oval-acute lobes much shorter than the curved tube and streaked with purple-brown; stamens attached to middle of tube; style slender, as long as stamens; corm globular, with a fibrous tunic.—Railway line and fields between Blackwood and Belair.—Oct.

Ferraria undulata, L. Stem stout, erect, rising from a depressed corm; leaves long, glaucous, broad-linear, loosely equitant, and passing gradually into oval floral bracts with narrow white edges; spathe stalked, 2-flowered, swollen, striate, 4-6 cm. (1½-2½ in.) long; flowers pedicellate, very fugitive; perianth 4-5 cm. (nearly 2 in.) across, divided almost to the base into 6 shortly clawed, spreading purple-blotched segments, greenish and wavy on the edge; style-

branches shorter than stamens, delicately fringed; filaments free in the upper part, anthers small, oblong, with parallel cells.—Roadside near Lyndoch.—Oct.

Family 53.—AMARYLLIDACEÆ.

Like *Iridaceæ*, except that the stamens are 6, and the anthers open inwards.

Agave, L.

(Greek *agauê*, wonderful.)

1. **Agave americana,** L. *American Aloe.* Large, stemless perennial, which does not flower until several years old; leaves 25-40, in a dense radical rosette, 1-2 m. (3-6 ft.) long, oblanceolate, thick and fleshy, glaucous-green, sometimes with a yellow border, ending in a stout rigid spine, the edges of the leaf bordered by distant, sharp, recurved teeth; flowers large, erect, yellowish, in corymbose panicles on horizontal branches, forming a long loose, compound panicle on the upper part of a stout peduncle 7-10 m. (22-32 ft.) high; perianth deeply divided into oblong, subequal segments; stamens twice as long as segments; capsule oblong, woody.

Agave americana.

Planted for hedges and now naturalised in many parts of the State; increasing by suckers.—Nov.-Feb.—Mexico; called *Century Plant* in the United States, from the old belief that it flowered only once in 100 years, *Pita* and *Maguey* in Spanish America. The juice, extracted from the peduncle before flowering, and then fermented, makes an intoxicating drink *(pulque)*.

Family 54.—JUNCACEÆ.

1. Juncus, L.

Perianth of 6 scarious segments in 2 rows, spreading in flower and then appressed on the fruit; style 1, with 3 slender stigmatic branches; ovary free; capsule with 3 (often incomplete) cells, opening by 3 valves, and containing numerous minute seeds. Herbs with narrow leaves, scarious and sheathing at base; bracteoles 1-2 at base of each flower.

Stem-leaves absent; flowers in a terminal cluster ... ... *J. capitatus* 1

Stem-leaves present; flowers solitary along the branches ... ... *J. bufonius* 2

1. **Juncus capitatus,** Weigel. *Capitate Rush.* Dwarf annual; stems slender, naked, unbranched; leaves all radical, shorter than the stems, linear-channeled; flowers 3-10 in a terminal cluster, with sometimes a second cluster a little lower on the stem, subtended by a floral leaf, each cluster with 2 leafy bracts at base, the lower one longer and exceeding the flowers; perianth segments brownish with a green keel, the inner ones shorter than the outer, which have a long, finally curved point; stamens 3; capsule small, bluntly ovoid, mucronate, much shorter than the perianth.

Pasture, Mount Lofty Range.—Sept.-Oct.—Almost cosmopolitan.

Juncus capitatus.

2. **J. bufonius,** L. *Toad Rush.* Annual, rather taller than the preceding, with numerous slender stems, branching from near the base; leaves short, linear-channeled, radical and at the base of the branches; flowers solitary along the branches and in the forks, or 2-3 together at the ends; bract scarious, shorter than the flower; perianth pale-green, the outer segments longpointed and exceeding the inner; stamens 3 or 6; capsule dark-red, shining, mucronate.

Adelaide plains and hills.—Sept.-Oct.—Temperate regions of the globe; considered by some authorities a native.

Richardia africana.

Family 55.—**ARACEÆ.**

1. Richardia, Kunth.

(After L. C. Richard, a French botanist.)

1. **Richardia africana,** Kunth. *Arum Lily.* Perennial herb with a thick rootstock: leaves large, with branching nerves, stalked, radical, dark-green, oval-cordate, pointed; spathe large, white, funnel-shaped, slit to the base, spreading in the upper part, pointed and recurved at summit; spadix bright-yellow, on a stout radical peduncle; stamens covering the

upper part, the numerous female flowers clustered round the lower part of the spadix and surrounded by barren stamens; style short; fruit a berry, 1-5-celled.

Ornamental plant; Waterfall and other gullies in the Mount Lofty Range.—Sept.-Dec.—South Africa.

Family 56.—CYPERACEÆ.

Perianth none or inconspicuous; stamens usually 3, attached at the base of the free ovary; style 1, with 2-3 stigmatic branches; fruit a small, seedlike akene, 1-seeded; each flower rising from the axil of a small bract called a *glume*, which plays the part of a perianth, the glumes overlapping each other and forming small spikes called *spikelets*. Herbs with solid stems and cylindrical or grass-like leaves, surrounding the stem in a tubular sheath, which is not slit as in *Gramineæ*.

Flowers bisexual; spikelet with the glumes in 2 opposite rows; akene naked ... ... CYPERUS 1
Flowers unisexual; spikelet with the glumes in several rows round the axis; akene enclosed in a little membranous bag (*utricle*) ... ... CAREX 2

1. CYPERUS, L.

1. **Cyperus rotundus,** L. *Nutgrass.* Perennial with slender rootstock, swollen here and there into blackish, ovoid, tunicated tubers; stem slender, triangular towards the top; leaves numerous, linear, glossy-green, keeled; spikelets reddish-brown, compressed, linear 10-20 mm. ($\frac{1}{2}$-$\frac{3}{4}$ in.) long, arranged in short spikes or clusters on the 4-10 very unequal rays of an umbel, with 2-4 floral leaves at base; axis of spikelet winged; glumes keeled and faintly nerved; stamens and stigmas 3; akene triangular, half the length of the glume.

A weed in the North Adelaide reserves.—Dec.-Mar.—Most countries, including the eastern States of Australia. Very difficult to eradicate.

Cyperus rotundus.

2. CAREX, L.

1. **Carex Bichenoviana,** Boott. *Bicheno's Sedge.* Glabrous perennial, 30-50 cm. (12-20 in.) high, with a creeping rootstock; stem erect, striate, triangular and smooth on the edges; leaves stiff, linear, longer than stem.

5-6 mm. (¼ in.) broad, keeled; spikelets cylindrical, males 8-20, sessile, in a dense terminal spike, with a short pointed bract at base, the terminal spikelet usually the longest; below these are 1-2 distant, subsessile female spikelets, with a few male flowers at top, and 1 entirely female spikelet, about 4 cm. (1½ in.) long, much further down the stem on a slender peduncle often twice as long as the spikelet, all the female spikelets subtended by leafy bracts longer than the inflorescence, and not dilated at base; glumes reddish-brown, keeled and awned, male oblong-truncate, female oval; stamens and stigmas 3; utricle corky in texture, 4 mm. long, ovoid striate, with a conspicuous bifid beak exceeding the glume; akene triangular.

Carex Bichenoviana.

Grange Road and Reedbeds.—Sept.-Nov.—It is difficult to say whether this plant should be classed as native or alien to South Australia. It was described originally by Dr. Francis Boott, an English authority on *Carex*, from specimens obtained at Woolnorth, Tasmania, by R. C. Gunn, who collected in the island from 1832 to 1850, and published from Boott's MSS. in J. D. Hooker's *Flora Tasmaniæ*, ii., 101. The specimens appear to have lacked ripe fruits (*Fl. Aust.* vii. 447). Since then the plant has not been found in its original home, and L. Rodway, in his *Tasmanian Flora*, published in 1903, says, after describing it:—"Inserted from record only. Doubtful." It does not appear to have been recorded for South Australia until a patch of it was discovered on the Grange Road in 1905. Near *C. pumila*, Thunb., but differs in the number of male spikelets.

Family 57.—GRAMINEÆ.

Perianth reduced to 2 (rarely 3) minute, delicate scales, termed *lodicules*, at the base of the ovary and stamens. The perianth, as a protector, is replaced by 2 membranous bracteoles, the lower of which is called the *flowering glume*, and encloses the upper, called the *palea*; within the latter is the real flower, composed of the lodicules, pistil, and stamens. The term "flower" is, however, understood to include the flowering glume and palea. Below these, and enclosing them more or less, are 2 (rarely

3 or 4) empty bracts called the *outer* or *empty glumes*. All these together form a *1-flowered spikelet*, but there may be several flowers arranged one above the other in 2 rows on opposite sides of a common axis (so that the upper flowers often appear to be stalked), with the outer glumes at the base, the whole forming a *several-flowered spikelet*; spikelets arranged in a spike, raceme, or panicle; stamens usually 3, anthers 2-celled; styles 2, with long feathery or downy stigmas; ovary free; fruit (*grain* or *caryopsis*) consisting of the single seed and the pericarp, which are usually inseparable.

Herbs (grasses) with alternate narrow leaves, embracing the stem with long sheaths which are slit at maturity on the side opposite to the blade; sheath ending at the base of the blade in a tonguelike membrane (*ligule*), sometimes very short, or reduced to hairs; stems usually hollow between the nodes.

In the illustrations the figures 1, 2, 3, 4 indicate the empty glumes in ascending order; *flg. gl.* = flowering glume; *p.* = palea; *lod.* = lodicules.

A. Spikelets with 1 fertile flower.
  B. Spikelets arranged in 1 or more simple spikes; spikelets sessile or subsessile in the notches of the axis.
    C. Spikes several, linear, 1-sided, digitate or branching from the stem near its summit.
      Spikelets compressed dorsally; flowering glume awnless, hardened in fruit.
        Outer glumes 3, the lowest minute ... ... (partly) PANICUM 1
        Outer glumes 2; anthers and stigmas violet ... ... PASPALUM 2
      Spikelets compressed laterally; flowering glume membranous, keeled, 3-nerved.
        Flowering glume awned; spikelet with a male or barren flower above the fertile one ... ... CHLORIS 3
        Flowering glume awnless; spikelet containing only the fertile flower CYNODON
    C. Spike solitary at the end of the stem.
      Spike linear, 1-sided; flowering glume awnless; spikelets with a male flower below the fertile one STENOTAPHRUM 4
      Spike subcylindrical; flowering glume long-awned; spikelets in 3's; outer glumes forming a half-involucre ... ... HORDEUM 5
  B. Spikelets arranged in a dense spike-like panicle (compound spike).
    D. Spikelets with a bristly involucre; outer glumes shorter than the flower.

Involucre of stiff persistant bristles; spikelets oblong; glumes as in *Panicum* ... ... SETARIA 6

Involucre of flexible, deciduous, plumose bristles; spikelets cylindrical ... ... PENNISETUM 7

D. Spikelets without a bristly involucre; outer glumes longer than the flower.

E. Spikelets awned.

F. Flowering glume awned; outer glumes equal.

Outer glumes 1-nerved, long-awned, much exceeding the flower.

Flowering glume with 1 short awn; spike oblong, bristly ... POLYPOGON 8

Flowering glume with 3 awns; spike ovoid, plumose ... ... LAGURUS 9

Outer glumes 3-nerved, not awned; no palea ... ... ALOPECURUS 10

F. Flowering glume awnless.

Outer glumes equal, shortly awned; stamens 3 ... ... PHLEUM

Outer glumes unequal, awnless; 2 awned empty glumes at base of flowering glume; stamens 2 ... ... ANTHOXANTHUM 11

E. Spikelets without awns.

Outer glumes with a winged keel; annual and perennial grasses PHALARIS 12

Outer glumes simply keeled; perennial sand-binding grass AMMOPHILA 13

B. Spikelets arranged in a loose panicle.

G. Spikelets in 2's or 3's, one sessile and fertile, the other, or 2 others, stalked and barren ... ... SORGHUM 14

G. Spikelets solitary or clustered, all stalked and alike.

H. Spikelet containing only 1 fertile flower.

Outer glumes 2, longer than the flower; stamens 3.

Outer glumes convex on the back ORYZOPSIS 15

Outer glumes compressed and keeled ... ... AGROSTIS 16

Outer glumes 3, the lowest small ... ... (partly) PANICUM 1

Outer glumes 4, the 2 outermost small and persistant; stamens 4-6 ... ... EHRHARTA 17

H. Spikelet containing 1 fertile flower and 1 male flower.

Lower flower male, long-awned; upper fertile; almost glabrous grass ... ... ARRHENATHERUM 18

Lower flower fertile, awnless; upper male; softly hairy grass HOLCUS 19

A. Spikelets with 2 or more fertile flowers.
I. Spikelets sessile in a simple spike.
Spikes compressed, 2-ranked.
Spikelets appressed to the axis by one of their sides or edges; outer glume 1 ... ... LOLIUM 20
Spikelets appressed to the axis by one of their flattened faces; outer glumes 2 ... ... AGROPYRUM
Spikes cylindrical; spikelets appressed to the axis by one of their faces (sides of the glumes).
Spikelets 3-5-flowered; outer glumes broad, blunt ... ... TRITICUM 21
Spikelets 2-flowered; outer glumes narrow, pointed ... ... SECALE 22
I. Spikelets subsessile in a contracted spikelike panicle.
Hairy grass; all spikelets fertile ... ... KŒLERIA 23
Glabrous grass; spikelets fertile and sterile ... ... CYNOSURUS
I. Spikelets in a loose panicle.
J. Flowers surrounded by long, silky hairs; tall grasses with straight, hollow stems ... ... ARUNDO 24
J. Flowers without long hairs at the base.
K. Outer glumes large, membranous, enclosing the flowers; flowering glume rounded on back.
Spikelets large; outer glumes many-nerved; flowering glume awned ... ... AVENA 25 176
Spikelets small; outer glumes 1-nerved; flowering glume awned or not ... ... AIRA 26
K. Outer glumes shorter than the flowers.
L. Flowering glume bifid, with awn inserted below the summit; ovary hairy; grain adhering to palea ... ... BROMUS 27 178
L. Flowering glume entire, awnless or with a terminal awn.
Flowering glume rounded on the back, not keeled; grain more or less adhering to the palea.
Spikelets drooping and quivering; glumes all boatshaped, awnless ... ... BRIZA 28 180.
Spikelets erect; flowering glume awned or mucronate ... ... FESTUCA 29
Flowering glume keeled on the back; grain free.
Spikelets in compact clusters; flowering glume shortly awned DACTYLIS 30
Spikelets not clustered; flowering glume awnless ... ... POA 31

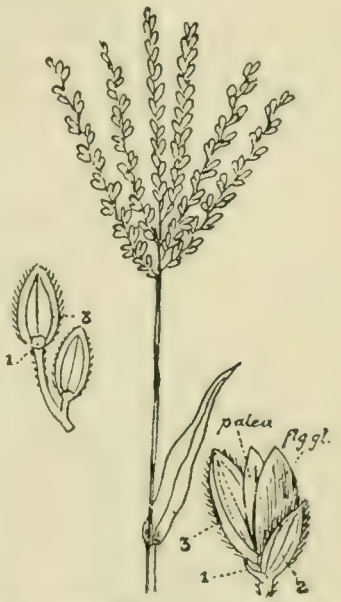
1. Panicum, L.

Spikelets compressed dorsally, 1-flowered; outer glumes 3, the lowest small, the 3rd representing a barren flower; flowering glume and palea tough and whitish.

Spikelets arranged on one side of the simple branches of the panicle.
- Spikelets small, pedicellate, in slender spikes ... ... *P. sanguinale* 1
- Spikelets larger, subsessile, in broad spikes ... ... *P. Crus-galli* 2

Spikelets arranged along the filiform, compound branches of a spreading panicle *P. miliaceum* 3

1. **Panicum sanguinale,** L. *Crab-grass* (U.S.A.). Annual with creeping-ascending stems rooting at the lower nodes; leaves short, lanceolate, wavy on the edges, villous; ligule short; spikes 3-11, very slender, 5-8 cm. (2-3 in.), in some specimens 12-16 cm. (5-6¼ in.) long, erect, then spreading, turning purple, subdigitate (in whorls, pairs, or alternate), at or near the top of the stem; spikelets 3 mm. long, lanceolate, twin in 2 rows along one side of the flattened axis of the spike, the lower spikelet on a short, and the upper on a long pedicel, each containing 1 bisexual flower; outer glumes 3, the lowest minute, the second acute, 3-nerved, ciliate, half as long as the 3rd, which equals the flower, and is flat, 7-nerved, ciliate; flowering glume and palea almost equal, tough, white, hardened in fruit and enclosing the free grain. *Digitaria sanguinalis*, Scop.



Panicum sanguinale.

Cultivated land, Reedbeds; creek, Burnside.—Dec.-Mar. —Most warm countries, including eastern and tropical Australia.

2. **P. Crus-galli,** L. *Cockspur Panic-grass, Barnyard-grass.* Has broader spikes, alternate or clustered along the stem in a long, contracted panicle; spikelets in 4 rows, subsessile along an axis bearing numerous bristles; 2nd and 3rd glumes mucronate or awned; leaves long, without any ligule.

A weed in moist places, often grown as fodder.—Dec.-Apl.—Cosmopolitan, and believed to be a native of South Australia.

3. **P. miliaceum,** L. *True Millet.* Stout erect annual, with villous leafsheaths and ligule of hairs; panicle with long erect branches but drooping at summit; spikelets all pedicellate, oval-acute; lowest glume acuminate, 5-nerved, one-third shorter than the many-nerved 2nd and 3rd glumes, the 3rd glume containing a palea half its length; flowering glume and palea white, smooth and shining.

Cultivated as fodder and subspontaneous in moist places. —Dec.-Apl.—Egypt, Arabia, India.

2. Paspalum, L.

(Greek *paspalos*, millet.)

Spikelets along 1 side of the axis of slender spikes; outer glumes 2, membranous, equal; flowering glume and palea as in *Panicum*.

Spikes 2, terminal and close together ... ... *P. distichum* 1
Spikes several, distant and alternate on the stem ... ... *P. dilatatum* 2

1. **Paspalum distichum,** L. Perennial, with ascending stems, creeping and rooting at the nodes; leaves with a few long hairs at the sides of the blunt, short ligule; spikes twin, 2-4 cm. ($\frac{3}{4}$-$1\frac{3}{4}$ in.) long, dense, one rising a little above the other at the end of the stem, at first appressed together, afterwards erect-spreading; spikelets 3-4 mm. long, oval-oblong, sessile in 2 rows along the flattened axis; outer glumes 3-nerved; flowering glume and palea slightly shorter.

Close to water; Waterfall Gully; River Torrens.—Dec.-Mar.—Tropical countries, also eastern Australia.

2. **P. dilatatum,** Poiret. Perennial, with tall, erect stems and creeping rootstock; leaves long, with lanceolate ligule and ribbed sheaths; spikes 3-10, dense, with long hairs at base, 3-12 cm. ($1\frac{1}{4}$-$4\frac{1}{2}$ in.) long, distant and alternate along the stem, forming a long, narrow panicle; spikelets 3-4 mm. long, oval-acute, overlapping in 4 rows on a flat, narrow axis; the lower spikelet on a short, the upper on a long, jointed pedicel; outer glumes broad-oval, acute, the lower one 5-nerved, villous on back, ciliate with long soft hairs, the upper glume 7-nerved;

Paspalum dilatatum.

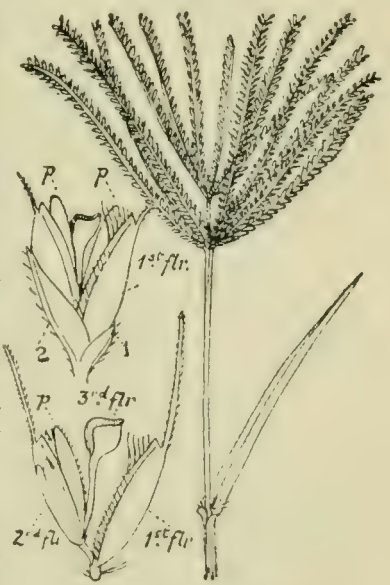
flowering glume rather shorter, almost circular, minutely pitted under lens.

Grown as a fodder grass and spontaneous in moist places.—Dec.-Apl.—Argentina, Uruguay.

3. Chloris, Swartz.

(Greek *chlôros*, pale-green.)

1. **Chloris gayana,** Kunth. *Rhodes-grass.* Erect perennial, with creeping rootstock; ligule ciliate with long hairs; spikes subdigitate, 8-18, suberect, 5-10 cm. (2-4 in.) long; spikelets crowded, sessile in 2 rows on one side of the slender axis; outer glumes 2, unequal; lowest flower of spikelet bisexual, flowering glume notched, ciliate on the marginal nerves and with a long beard on the edge near the summit, awn shorter than or as long as glume, rising from the notch; 2nd flower male, glabrous, awned, shortly stalked; 3rd flower on a rather long stalk, minute, consisting of a broad-truncate awnless flowering glume, empty or rarely with 3 stamens and a palea.



Chloris gayana.

Introduced of late years for pasture, and spontaneous in places; said to be a good sand-binder.—Dec.-Apl. South Africa (Transvaal).

C. truncata, R. Br., a far-northern and east-Australian native grass, is now common along the Grange Railway. It has 7-10 slender, spreading, digitate spikes, 10-15 cm. (4-6 in.) long; lowest flower bisexual, upper shortly stalked, barren, both with truncate flowering glumes and awns more than 4 times their length.

Cynodon Dactylon, Richard. *Couch-grass* (Australia); *Bermuda-grass* (North America). This well-known lawn-grass, with ascending stems and 4-6 slender, digitate, purplish spikes, was found by early explorers so widely dispersed in the moist parts of Australia that it has been accepted as native. Almost cosmopolitan. Not the Couch-grass of England, which is *Agropyrum repens*, P.B.

4. Stenotaphrum, Trinius.

(Greek *stenos*, narrow, *taphros*, a trench; alluding to the excavations of the axis.)

1. **Stenotaphrum americanum,** Schrank.

Buffalo-grass (Australia); *St. Augustine-grass* (U.S.A.). Glabrous perennial, with creeping rootstock and ascending stems; leaves keeled, blade blunt, sheath flattened, ciliate near summit; spike solitary, terminal, erect, 1-sided; spikelets twin, in 2 rows, embedded in the alternate notches of the broad thick axis, the lower spikelet sessile, the upper on a thick, awned pedicel; outer glumes membranous, very unequal, the lower one minute, the upper 7-nerved, as long as the flowers, of which each spikelet has 2, the first male, the second bisexual; anthers orange, stigmas plumose, purplish.

A lawn-grass, spontaneous here and there, especially in sandy places.—Dec.-Mar.—Warm parts of America and Africa.

Stenotaphrum americanum.

5. Hordeum, L.

Spikelets subcylindrical, arranged in 3's in the alternate notches of the fragile axis, forming a dense, cylindrical spike; outer glumes 2, subequal, narrow, awned, the 6 placed side by side before the 3 spikelets so as to resemble a half-involucre; flowering glume convex, 5-nerved, long-awned; palea 2-nerved and bifid; all the awns denticulate and rough downwards; grain oblong, hairy at summit, channeled on the inner face, adhering to the flowering glume and pale.

Leaf-sheaths glabrous; flowering glumes with an awn much longer than the outer glumes ... ... *H. murinum* 1

Leaf-sheaths downy; flowering glumes of the lateral spikelets with an awn much shorter than the outer glumes ... ... *H. maritimum* 2

1. **Hordeum murinum,** L. *Barley-grass.* Annual, with short, leafy, tufted, ascending stems; leaf-blades flat, villous, sheaths glabrous; spikelets pedicellate, the central one with a bisexual flower, the lateral ones with a barren flower; the 4 central empty glumes linear-lanceolate, ciliate, (the 2 inner ones sessile), the 2 outermost reduced to awns and not ciliate; flowering glume

lanceolate, tapering into an awn 3 times its length and much longer than the outer glumes.

All over the State.—Oct.-Dec. —Cosmopolitan.

2. **H. maritimum,** With. *Sea Barley.* Glaucous annual, resembling the preceding; sheaths of the lower leaves downy; spikes smaller; middle spikelet fertile and sessile, the lateral ones smaller, barren, and pedicellate, with awns shorter than their outer glumes; all the outer glumes bristle-like, not ciliate.

Adelaide plains near the sea.—Oct.-Dec.—Sea-coasts of western and southern Europe.

Hordeum murinum.

Cultivated Barley, a tall, glabrous annual, falls readily into two divisions: the first having the spike compressed laterally, the central spikelet fertile, sessile and long-awned, the 2 lateral spikelets barren, pedicellate and awnless (*H. distichum*, L., Two-rowed Barley); the second having the spikes 4-angled or 6-angled, and the spikelets all fertile and long-awned (*H. vulgare*, L., Four-rowed or Square Barley, and *H. hexastichum*, L., Six-rowed Barley). All are spontaneous for a period.

6. Setaria, P.B.

(Latin *seta*, a bristle; alluding to the bristles surrounding the spikelets.)

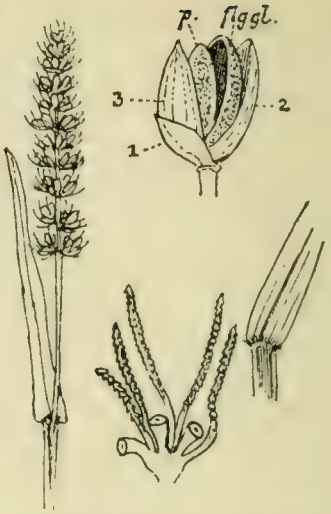
Spikelets compressed dorsally, arranged in a spike-like, cylindrical panicle; outer glumes 3, membranous, unequal, the lowest small, 3-nerved, the 2nd and 3rd 5-nerved, the 3rd containing a palea and rarely a male flower; flowering glume and palea as in *Panicum*.

Spikelets whorled; involucre of few bristles *S. verticillata* 1
Spikelets alternate; involucre of several bristles ... ... *S. glauca* 2

1. **Setaria verticillata,** P.B. Erect glabrous annual, with stems rough at the summit; ligule of short hairs; panicle somewhat interrupted and rough upwards from the numerous stiff, denticulate, persistant bristles, the short, thick panicle-branches arranged in false-whorls; spikelets oblong, blunt, each with about 2 bristles at the base of the short pedicel, the bristles covered with little teeth pointing downwards; the lowest outer glume about half

as long as the other 2; fruiting glume minutely pitted.

Cultivated land and near creeks, Burnside.—Dec.-Apl.—Temperate and subtropical countries.



Setaria verticillata.

2. **S. glauca,** P.B. Erect annual; leaves light-green, with a ligule of silky hairs; panicle dense, red-bristly; each spikelet with a cluster of about 10 bristles at base, the little teeth of the bristles erect; the 2nd outer glume exceeding the lowest one and shorter than the 3rd; flowering glume wrinkled transversely.

Near Second Creek, Burnside. —Dec.-Apl.—Temperate and subtropical countries, including eastern and central Australia.

S. viridis, P.B., which differs from *S. glauca* in having the 2nd and 3rd glumes of equal length, the flowering glume minutely pitted as in *S. verticillata,* and the summit of the leaf-sheaths ciliate-villous as well as the ligule, has appeared at Mount Gambier. It is a native of the Far North as well as of most subtropical countries, and when found in our settled districts, is probably introduced from abroad.

Pennisetum villosum.

7. Pennisetum, Richard.

(Latin *penna,* a feather, *seta,* a bristle, alluding to the plumose bristles.)

1. **Pennisetum villosum,** R. Br. Tufted perennial, the stem downy below the panicle; leaves narrow, keeled, minutely saw-toothed on the edges, villous-ciliate at base of blade, with a ligule of hairs; panicle oblong-cylindrical, long-bristly, dense, somewhat curved; spikelets conical, solitary or 2-5 together on a short villous peduncle, and surrounded by an involucre of slender, unequal bristles, much longer than the spikelets and plumose in the

lower half, with a few, short, simple bristles on the outside, the peduncle falling off from the axis with the bristles and spikelets; glumes lanceolate, the 2 outer ones small and unequal, the 3rd 7-nerved, mucronate, containing a palea and male flower, the 4th a little longer, 5-nerved, with a bisexual flower; styles very long, golden-plumose, united in their whole length or bifid at summit.

Ornamental-grass which has escaped in several places.—Nov.-Apl.– Abyssinia.

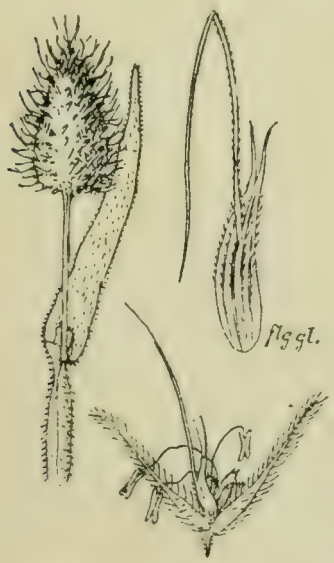
8. Polypogon, Desf.

(Greek *polys*, many, *pôgôn*, a beard; alluding to the awns which give the panicle a bearded or bristly appearance.)

1. **Polypogon monspeliensis,** Desf. *Beard-grass.* Erect or ascending annual, varying much in size, glabrous except the panicle; leaves rather long, with a long ligule; panicle 1-12 cm. (½-5 in.) long, cylindrical, dense, or somewhat lobed, bristly, whitish-green; spikelets 2-2½ mm. long, the pedicel distinctly jointed a little below the outer glumes, which are equal, keeled, downy, notched at top, with a terminal awn 2-3 times their length; flowering glume much shorter, membranous, truncate and 4-toothed at summit, with a terminal, deciduous awn.

Polypogon monspeliensis.

Adelaide plains, mostly near the sea.—Sept.-Dec.—Mediterranean region and west coasts of Europe.



Lagurus ovatus.

9. Lagurus, L.

(Greek *lagos*, a hare, *oura*, a tail; alluding to the shape of the panicle.)

1. **Lagurus ovatus,** L. *Hare's-tail-grass.* Annual, with erect or ascending stems; leaves flat, broad, softly downy, the uppermost one with a swollen sheath; ligule truncate, downy;

panicle, ovoid, dense, silky-white; outer glumes equal, keeled, much longer than the flower and tapering into a long plumose awn; flowering glume membranous, with 2 terminal awns and 1 much longer, bent, dorsal awn; grain oblong.

Common in sandy soil near the sea.—Sept. - Dec.—Mediterranean coasts.

Alopecurus pratensis.

10. Alopecurus, L.

(Greek *alôpêx*, a fox; *oura*, tail; shape of the spike.)

1. **Alopecurus pratensis,** L. *Meadow Foxtail.* Glabrous perennial; leaves long; ligule short, truncate; panicle long, dense, cylindrical, blunt, silky; 2 outer glumes equal, united at base, 3-nerved, ciliate on keel; flowering glume without a palea and about as long as the outer glumes, with a slender, protruding awn inserted above the base.

Cultivated for feed and spontaneous in places.—Oct.-Dec.—Temperate countries.

Anthoxanthum odoratum.

Phleum pratense, L. (Timothy-grass, Cat's-tail), resembles the preceding in its cylindrical, spike-like panicle, but the outer glumes are truncate, narrowed abruptly into a short awn and nearly twice as long as the flowering glume and palea.—Cultivated and subspontaneous in moist pastures.—Most temperate countries.

11. Anthoxanthum, L.

(Greek *anthos*, flower, *xanthos*, yellow; colour of the panicle after flowering.)

1. **Anthoxanthum odoratum,** L. *Scented Vernal-grass.* Fragrant, erect perennial; leaf-blade villous, sheath glabrous; panicle spikelike, oblong-cylindrical, rather loose; empty glumes 4, keeled, pointed, very unequal, lowest one half the length of the 2nd, which is 3-nerved, the 3rd

and 4th shorter, villous, the 3rd with a straight dorsal awn, the 4th with a bent basal awn about as long as the spikelet; flowering glume and palea still smaller, membranous; stamens 2.

Mount Lofty Range.—Sept.-Dec.—Europe; temperate Asia.

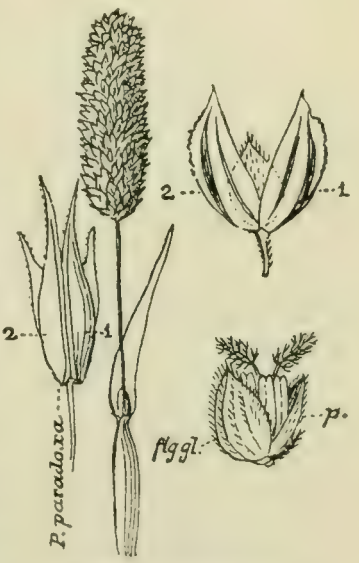
12. Phalaris, L.

Spikelets flattened laterally, arranged in dense, spike-like panicles; outer glumes subequal, longer than the flower, with a winged keel, the flower accompanied at its base by 1-2 short scales (barren glumes); flowering glume 5-nerved.

Panicle cylindrical; flower with 2 unequal scales at base.
- Plant annual ... ... *P. minor* 1
- Plant perennial ... ... *P. nodosa* 2

Panicle ovoid; flower with 2 equal scales at base ... ...
- Panicle short; outer glume with a blunt wing ... ... *P. canariensis* 3
- Panicle long; outer glume with a pointed wing ... ... *P. paradoxa* 4

1. **Phalaris minor,** Retz. Erect, glabrous annual, with a slender stem and the uppermost leaf with a swollen sheath; panicle oblong, whitish-green; 2 outer glumes membranous, nearly twice as long as the flower, with 3 broad, green nerves, the keel extended into a narrow, scarious, denticulate wing; flowering glume and palea villous, the latter having at base 1 bristle-like scale about one-third the length of the flower, the other scale minute.



Phalaris minor.

Roadsides and pasture.—Sept.-Dec.—Mediterranean region.

2. **P. nodosa,** L. Resembles the preceding, but is perennial; stem oblique and swollen at base; leaves glaucous; wing of outer glumes even narrower than in the preceding. Appears to be a marked variety, the typical form having 2-4 tuberous swellings on the rootstock.

Introduced as a good winter grass under the name of *P. commutata*, and spontaneous in places.—Sept.-Dec.—Mediterranean region.

3. **P. canariensis,** L. *Canary-grass.* Annual, with sheath of uppermost leaf much swollen; panicle short, ovoid; wing of the outer glumes broad and obliquely truncate at top; flowering glume and palea villous; 2 subequal scales at the base of and half as long as the flower.

Sandy places; rare.—Sept.-Nov.—Mediterranean region; said to have originated in the Canary Islands. The grain is used as bird-seed.

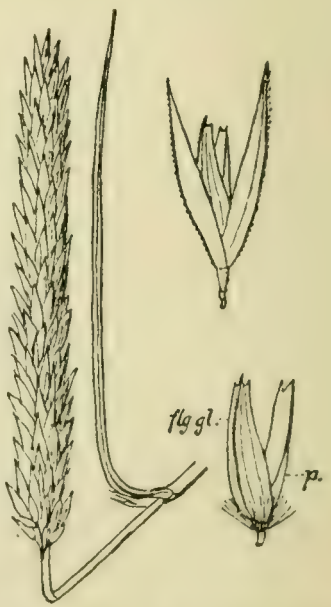
4. **P. paradoxa,** L. Glabrous annual; uppermost leaf much swollen and embracing the tapering base of the large, obovoid-oblong panicle; outer glumes terminating in an awn, the wing prolonged into a point; flowering glume almost glabrous, with 2 very small, almost equal scales at base.

Kingscote, Kangaroo Island.—Nov.-Dec.—Mediterranean region.

13. Ammophila, Host.

(Greek *ammos*, sand, *philos*, loving.)

1. **Ammophila arundinacea,** Host. *Marram-grass.* Coarse, almost glabrous perennial, with hard creeping rootstock and stiff, tall, erect stems; leaves long, narrow, rolled inwards so as to appear awl-shaped; ligule long, bifid; panicle cylindrical, dense, straw-coloured, 10-25 cm. (4-10 in.) long; spikelets compressed, 12-13 mm. (½ in.) long; 2 outer glumes nearly equal, acute, keeled, a little longer than the flower, which has a ring of long hairs at base; flowering glume stiff, 5-nerved, 3-toothed at top. *Psamma arenaria*, R. & S.



Ammophila arundinacea.

Planted along the sea-coast to fix drifting sand.—Sept.-Dec.—Coasts of Europe and N. America.

14. Sorghum, Pers.

1. **Sorghum halepense,** Pers. *Johnson-grass.* Tall, glabrous perennial, with a stolon-bearing rootstock; stems stout, erect, downy at the nodes; leaves flat, with a thick white midrib; ligule short, ciliate; panicle long, loose, pyramidal in shape, axis and branches rough downwards; spikelets compressed dorsally, in 2's or 3's, 1 sessile, oblong, with a bisexual flower, the other or 2 others pedicellate, lanceolate, purplish, with a male flower; empty glumes 3, the 2 outer equal, downy, stiff, shining, the 3rd smaller,

membranous; flowering glume of the fertile spikelet small, membranous, ciliate, bifid at summit, with or without a bent awn twice as long as the spikelet and rising between the lobes; palea narrow, ciliate; lodicules ciliate; grain oblong. *Andropogon halepensis*, Sibth.

Cultivated in moist districts and subspontaneous.—Dec.-May. —Mediterranean region.

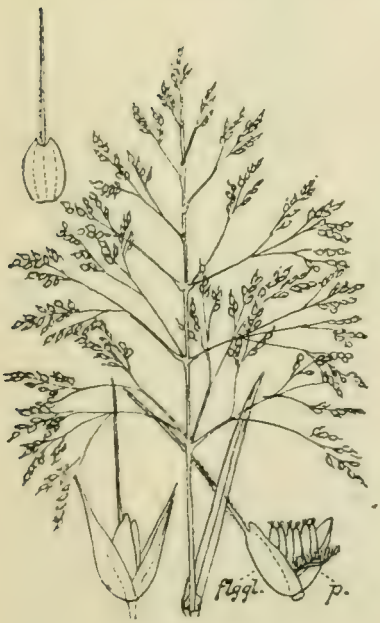
S. vulgare, Pers. (Cultivated Sorghum), is a tall stout annual, with downy panicle branches and broader spikelets; flowering glume of the fertile spikelet with a long or very short awn; grain broad-oval.—Warm regions of Africa and Asia.

Sorghum halepense.

15. Oryzopsis, Michaux.

(Greek *oryza*, rice, *opsis*, resemblance.)

1. **Oryzopsis miliacea,**



Oryzopsis miliacea.

Richter. *Many-flowered Millet-grass.* Glabrous perennial, with erect slender stems; leaves flat, glossy-green above, minutely saw-toothed on the edges: ligule truncate: panicle large, spreading, loose, with long slender branches, rough downwards: spikelets small, turning straw-coloured or purplish, pedicellate and clustered along the panicle-branches; 2 outer glumes membranous, persistant, rather unequal, lanceolate, rounded on back, 3-nerved, longer than the flowering glume, which is 3-nerved, notched, with a straight, terminal, deciduous awn twice its length and jointed at base; grain oblong, tightly enclosed in the hardened, shining, flowering glume and

palea; anthers hairy at summit. *Piptatherum multiflorum*, P.B.

Ornamental- and pasture-grass, spontaneous in places.—Oct.-Feb.—Mediterranean region.

16. Agrostis, L.

Spikelets small, numerous, compressed laterally; outer glumes 2, keeled, 1-nerved, longer than the membranous flowering glume; grain oblong, furrowed on the inner face.

Panicle loose; palea half as long as flowering glume ... ... *A. alba* 1
Panicle more compact; palea as long as flowering glume ... ... *A. verticillata* 2

1. **Agrostis alba,** L. Almost glabrous perennial, with stolon-bearing rootstock; leaves flat, rough downwards along the nerves; ligule long; panicle 5-20 cm. (2-8 in.) long, very loose during flowering, pale-green or purplish, the filiform branches naked in the lower part and rough downwards; spikelets 2 mm. long, numerous, on long pedicels, shining, clustered; outer glumes equal, lanceolate; flowering glume a quarter shorter than the outer glumes, 4-nerved, blunt and 4-toothed at summit; palea half as long, bifid.

Near Onkaparinga River.—Oct.-May.—Europe; temperate Asia.

2. **A. verticillata,** Villars. Resembles the preceding, but the panicle is not so long or so spreading; spikelets crowded and clothing the branches almost to the base; outer glumes twice as long as the flowering glume and palea, which are equal in length; ligule much shorter.

Common in moist spots.—Oct.-May.—Mediterranean region.

Agrostis verticillata.

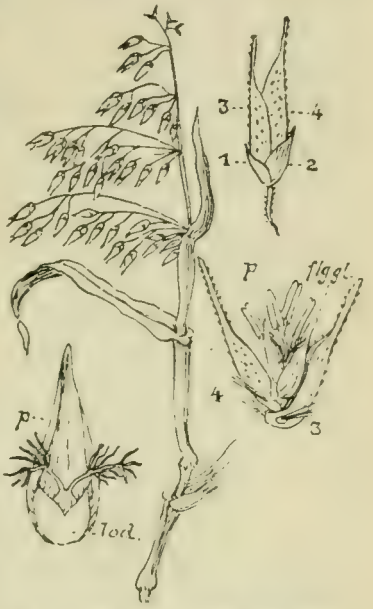
17. Ehrharta, Thunberg.

(After F. Ehrhart, a Swiss botanist.)

1. **Ehrharta longiflora,** Sm. Erect annual; leaves rather short, flat, rough, the uppermost sheath swollen; ligule short, jagged, ciliate; panicle loose, narrow, often 1-sided, 7-20 cm. (3-10 in.) long; spikelets clustered

on long, filiform, hairy, unequal pedicels; empty glumes 4, the 2 outer small, unequal, persistant, purplish, keeled, acuminate, the 3rd rather shorter than the 4th, both 5-nerved, rough, concave, hard and shining, tapering into a stiff awn and with tufts of hair at base; flowering glume shorter, with a palea of about the same length; stamens 4-6, lodicules united, ciliate.

Adelaide plains and hills.—Sept.-Nov.—South Africa.

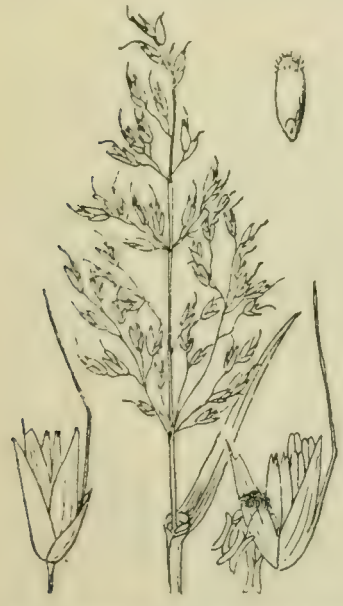


Ehrharta longiflora.

18. ARRHENATHERUM, P.B.

(Greek *arrhên*, male, *athêr*, awn; alluding to the awn of the male flower.)

1. **Arrhenatherum avenaceum,** P.B. *False Oat.* Tall, erect perennial with flat leaves and a short, truncate ligule; panicle 10-30 cm. (4-12 in.) long, loose in flower, contracted afterwards; spikelets compressed, 2-flowered, the lower male, the upper bisexual, axis terminating in a minute bristle; outer glumes 2, unequal, membranous, keeled, the upper one as long as the flowers; male flowering glume with a long bent awn rising from near the base; fertile flowering glume with or without a minute awn below the top; grain oblong, downy at summit. *Avena elatior*, L.



Arrhenatherum avenaceum.

South-Eastern district.—Oct.-Jan.—Europe; western Asia.

19. HOLCUS, L.

1. **Holcus lanatus,** L. *Woolly Holcus, Yorkshire Fog.* Erect, softly villous perennial; leaves flat, soft, with a truncate, torn ligule; panicle 8-15 cm. (3-6 in.) long, oblong, downy, varying from light pink to violet; spikelets crowded, 2-flowered, the lower bisexual, the

upper male, stalked; outer glumes 2, equal, boatshaped, keeled, downy, enclosing the flowers, the upper one 3-nerved, mucronate; flowering glumes rather smaller, the male one with a short, dorsal awn.

Moist places in settled districts. — Oct.-Mar. — Europe; temperate Asia.

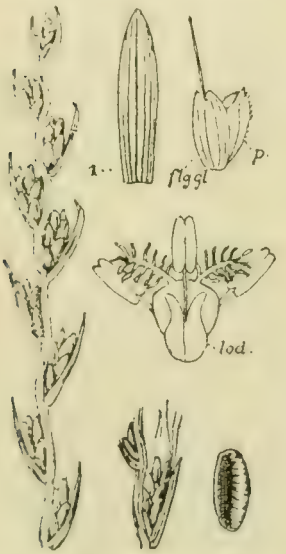
Holcus lanatus.

20. Lolium, L.

Spikelets sessile in the notches of the axis and appressed to it by one of their sides (backs of the glumes), forming a loose, compressed, 2-sided spike; outer glume 1, except in the terminal spikelet, stiff, convex, but not keeled, several-nerved; flowering glume convex, 5-nerved; grain oblong, channeled on the inner face, adhering to the palea.

Flowers oblong, swollen in fruit; grain thick, ovoid-oblong; annuals.
- Outer glume equalling or exceeding the large spikelet; stem stout ... ... *L. temulentum* 1
- Outer glume shorter than the small spikelet; stem slender ... ... *L. remotum* 2

Flowers lanceolate, not swollen in fruit; grain linear-oblong; perennial ... ... *L. perenne* 3



Lolium temulentum.

1. **Lolium temulentum,** L. *Darnel.* Glabrous annual, varying much in size; spike long, with a thick, stiff, zigzag axis; spikelets usually large, 3-9-flowered, broad-topped in fruit; outer glume equalling or longer than the flowers; flowering glume with a long or short awn below the summit, or awnless.

Roadsides, pasture, and cultivation. Oct.-Jan.—Europe; temperate Asia. The seed is reputed poisonous, producing a form of drunkenness (hence the specific name). This grass is believed to be the "tares" *(zizanion)* of Matt. xiii. 25.

2. **L. remotum,** Schrank. Annual: stem and axis of spike slender; spikelets rather distant,

of 3-8 flowers, and not so much swollen when ripe as in the preceding; outer glume shorter than the spikelet and sometimes very little longer than the contiguous flower; flowering glume usually awnless, or with a short, fine awn. *L. linicola*, Sonder.

Cultivated land on the Adelaide plains.—Oct.-Dec.—Europe and western Asia, where it is usually found in fields of flax.

3. **L. perenne,** L. *Rye-grass.* Resembles *L. temulentum*, but is perennial and an excellent feeding-grass, producing barren leafy shoots from the base; outer glume shorter than spikelet; flowers 3-12, not swollen in fruit, so that the outline of the spikelet remains lanceolate-oblong, tapering towards the summit; flowering glume usually awnless.

Pastures and roadsides.—Oct.-Mar.—Temperate parts of the globe. A cultivated biennial variety with numerous long-awned flowers in each spikelet is *L. italicum*, A. Braun. (Italian Rye-grass), and is sometimes spontaneous.

Agropyrum littorale, Dumortier, a stiffish maritime-grass, has been found localised near Fulham. Leaves broad but rolled inwards; spikes narrow and dense; spikelets lanceolate, 3 times as long as the notches, with 4-6 awnless flowers; outer glumes nearly equal, mucronate, 7-nerved, half as long as the spikelet; flowering glume obtuse, mucronate, 5-nerved. Sometimes considered a variety of *A. repens*, P.B., the "Couch-grass" of England. Shores of western Europe and Mediterranean.

21. TRITICUM. L.

1. **Triticum sativum,** Lamarck. *Wheat.* Annual, with an erect stem (straw) and long flat leaves, rather rough above; ligule short, truncate; spikelets 3-5-flowered, nearly as broad as long, sessile in the alternate notches of a zigzag, ciliate axis, and forming a long, dense, somewhat 4-angled spike ("ear"), 1 or 2 upper flowers usually barren; outer glumes 2, equal, oblong, convex, several-nerved, blunt, mucronate, or shortly awned; flowering glume convex, 7-nerved, mucronate, or with a long terminal awn *(bearded wheat);* all the glumes (chaff) hardened and shining in fruit: and each spikelet ripen-

Triticum sativum.

ing usually 2-3 grains, which are free, ovoid, grooved on the inner face, downy at summit.

Ordinary South Australian wheat has the hollow stem of var. *vulgare*, Hackel (*T. vulgare*, Villars), but it has the outer glumes keeled right down the back of var. *turgidum* (*T. turgidum*, L.), which in Europe is also distinguished by its solid stem. Var. *durum* (*T. durum*, Desf.), Hard or Maccaroni Wheat, which is grown in the south of Europe, the drier parts of America, and is being tried in Australia, has a solid stem, awned flowers, keeled outer glumes, and a hard, horny grain, not mealy as in the other varieties.

The principal cereal grown in this State, and spontaneous for a year or two after cultivation. Sept.-Oct. — Origin unknown, but doubtless the result of cultivation extending over several thousand years. The only *Triticum* known to grow wild is *T. monococcum*, L., One-grained Wheat, which is sometimes cultivated on poor lands of the Old World, and is spontaneous in south-eastern Europe and western Asia.

22. Secale, L.

1. **Secale cereale,** L. *Rye.* A tall annual with flat leaves and a long, dense, cylindrical bearded spike, finally drooping; spikelets with 2 fertile flowers; outer glumes awl-shaped, 1-nerved and keeled; flowering glume long-awned.

Grown for early green feed and as a sand-binder; subspontaneous. Probably of Mediterranean origin, and largely cultivated in Europe as a cereal.

Secale cereale.

23. Kœleria, Pers.

(After G. L. Kœler, of Mainz, author of a work on the Grasses.)

Spikelets compressed laterally, 2-6-flowered, the lowest flower sessile, the others stalked; outer glumes 2, membranous, keeled; flowering glume 3-nerved.

Annuals; flowering glume 2-toothed and awned.
- Outer glumes slightly unequal, shorter than flowers ... ... *K. phleoides* 1
- Outer glumes very unequal, longer than flowers ... ... *K. Michelii* 2

Perennial; flowering glume entire ... ... *K. cristata* 3

1. **Kœleria phleoides,** Pers. *Cat's-tail Kœleria.* Annual, with erect or ascending, glabrous stems; leaves flat, narrow, villous, with a short, truncate, torn ligule; panicle dense, spikelike, 2-9 cm. (¾-3½ in.) long, cylindrical or oblong, often slightly lobed, whitish-green, spikelets 4 mm. long, 4-6-flowered; outer glumes unequal, hairy at least on the keel, shorter than the flowers; flowering glume 2-toothed, with a short awn in the notch; palea shorter, deeply bifid.

Roadsides and pastures.—Sept.-Nov.—Mediterranean region.

2. **K. Michelii,** Cosson. Small downy annual; leaves short, very narrow; panicle rather loose when flowering, whitish, 2-9 cm. (1-3½ in.) long; spikelets 3-4-flowered; outer glumes very unequal, the lower one minute and bristle-like, the upper one 4 times as long and equalling or exceeding the flowers; flowering glume narrow-cylindrical with an awn half as long as the flower, rising from the notch between the 2 teeth; palea only half as long as the flowering glume.

Kœleria phleoides.

Mount Lofty Range; Flinders Range near Gladstone; Kangaroo Island. Sept.-Nov. Mediterranean region.

3. **K. cristata,** Pers. *Crested K.* Perennial with erect or ascending stems, glabrous or downy at summit, leaves narrow, flat or folded, more or less villous; ligule short, truncate; panicle 4-15 cm. (1½-6 in.) long, lobed and often interrupted near the base; spikelets 6 mm. (¼ in.) long, 2-4-flowered; outer glumes unequal, a little shorter than the flowers; flowering glume acuminate, shining; palea bifid.

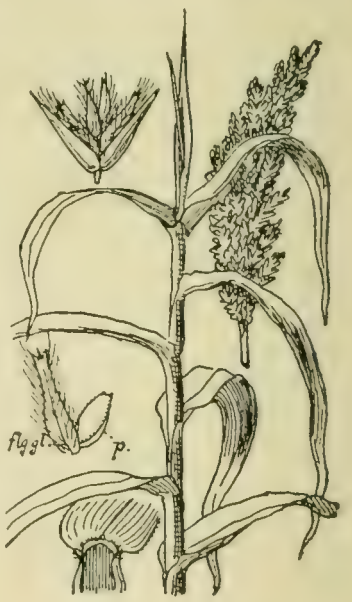
South-Eastern District.—Sept.-Nov.—Europe; temperate Asia; America.

Cynosurus cristatus, L. Crested Dog's-tail. Perennial with narrow leaves; long, narrow, 1-sided, spikelike panicle; outer spikelets of each cluster sterile and resembling pinnate bracts; inner spikelets fertile, 3-7-flowered; all the glumes very shortly awned, the outer ones shorter than the flowers.—Sown for pasture in moist places and subspontaneous.—Europe.

24. Arundo, L.

1. **Arundo Donax,** L. *Giant Reed*, popularly *Bamboo*. Perennial 2-5 m. (6-15 ft.) high, with long creeping roots and hollow, woody stems thicker than the thumb; leaves broad, smooth or with rough-ciliate edges; ligule short, ciliate; panicle 40-60 cm. (1-2 ft.) long, oblong, dense, whitish-green or violet; spikelets with 3-4 flowers and long white hairs on the axis between them; outer glumes 2, equal, as long as the flowers; flowering glume trifid, with long hairs; palea much shorter.

Cultivated for ornament and spontaneous in places; flowers rarely.—Feb.-Mar.—Moist sandy places of the Mediterranean region; known as *Canne de Provence* in France.



Arundo Donax.

A. Phragmites, L. (Common Reed), a cosmopolitan plant and a native of South Australia, grows freely along the banks of the Torrens and of other streams. It differs from the preceding in its slighter and fragile stems; the outer glumes unequal and shorter than the flowers.

25. Avena, L.

Spikelets compressed laterally, with 2-3 flowers, all stalked; outer glumes 2, large, persistant, membranous, 7-9-nerved; flowering glume stiff, convex, 6-nerved, bifid, with a long bent and twisted awn rising from its back; grain downy at top, oblong.

Flowering glume covered with long, silky hairs in its lower half; flowers jointed on the axis of the spikelet.
- Flowering glume shortly bifid ... ... *A. fatua* 1
- Flowering glume with 2 long bristles ... *A. barbata* 2

Flowering glume glabrous; flowers not jointed on the axis of the spikelet ... *A. sativa* 3

1. **Avena fatua,** L. *Wild Oat*. Annual with flat leaves and a loose, pyramidal panicle; spikelets large, very open, drooping from long, filiform pedicels, with 2-3 flowers, all, or the 2 lower ones, awned; axis villous; outer glumes subequal, longer than the flowers; flowering glume golden-brown, covered with long hairs, rarely subglabrous, shortly bifid so as to end in 2 fine teeth; awn twice as long as the spikelet.

Cultivated and waste places. May-Dec.—Common weed in all wheat-growing countries.

2. **A. barbata,** Brotero. *Bearded Oat.* Differs from the preceding in having a 1-sided panicle; outer glumes rather unequal; flowers all awned; flowering glume with long white hairs and ending in 2 long scarious bristles, so that the flower is at least as long as the lower empty glume.

Roadsides and pasture.—Sept.-Nov. — Mediterranean region.

Avena fatua.

3. **A. sativa,** L. *Cultivated Oat.* Differs from the 2 preceding species in the glabrous flowering glume, which is shortly 2-toothed at top, the lower flower usually with a dorsal awn twice as long as the spikelet, the upper flower awned or awnless; axis of spikelet glabrous, or hairy below the lower flower.

Cultivated for horse-feed and spontaneous in places.—Sept.-Nov.—Origin unknown, but not far removed from *A. fatua.*

26. Aira, L.

Spikelets very small, compressed laterally, 2-flowered; outer glumes 2, equal, persistant, membranous, keeled, 1-nerved; flowering glume awned or not; grain glabrous.

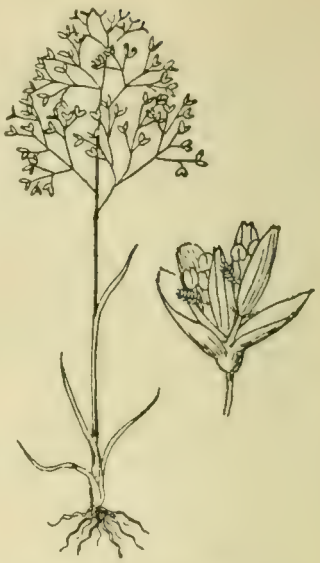
Panicle narrowed at base; outer glumes longer than the awned flowers ... ... *A. caryophyllea* 1
Panicle spreading; outer glumes shorter than the awnless flowers ... ... *A. minuta* 2

1. **Aira caryophyllea,** L. *Silvery Hair-grass.* Slender, erect, glabrous grass: leaves rather short, narrow-linear, inrolled; ligule lanceolate; panicle loose, with long, filiform, spreading-erect branches; spikelets oblong-urn-shaped; flowers with short tufts of hair at base, both or only the upper one awned; outer glumes concave, acute, white, shining, longer than the flowers, flowering glume acuminate, bifid, with a bent awn springing from its base and quite half as long again as the spikelet.

Pasture, Adelaide plains.—Sept.-Nov.—Europe; western Asia.

2. **A. minuta,** L. (1753), Lœfling (1758). Erect, dwarf, glabrous grass, with very slender stems and short, narrow-linear leaves; ligule oblong; panicle small, loose, with long, filiform, almost horizontal branches and pedicels; spikelets ovoid, colored, shining, distant; outer glumes green and purplish, a little shorter than the flowers, the upper flower shortly stalked and both with a tuft of hair at base; flowering glume truncate-denticulate, without an awn.

Pasture, Adelaide plains and hills. — Aug. - Sept. — Mediterranean region.



Aira minuta.

27. Bromus, L.

Spikelets compressed laterally, several-flowered, with a fragile axis; outer glumes 2, unequal, shorter than the flowers; flowering glume rounded on back, bifid, awned a little below the summit; stamens 1-3; palea ciliate on the 2 nerves; styles distinct, inserted on one side of the downy summit of the ovary; grain villous at top, linear-oblong, adhering to the palea.

A. Spikelets widened at summit (wedge-shaped) after flowering; lower empty glume 1-nerved, upper 3-nerved; flowering glume with 2 long, fine points; awns of lateral flowers almost equalling or exceeding those of the upper flowers; panicle drooping more or less after flowering.
  Panicle long (18-25 cm.), rather loose.
    Spikelets very long; stem downy ... *B. maximus* 1
    Spikelets shorter; stem glabrous ... ... *B. sterilis* 2
  Panicle shorter (10-15 cm.), rather dense.
    Flowering glume curved outwards when ripe; stem slender, glabrous ... *B. madritensis* 3
    Flowering glume straight; stem stout, downy ... ... *B. rubens* 4

A. Spikelets contracted at summit (oblong) even after flowering; outer glumes several-nerved, the awns of the lateral flowers never reaching the same height as those of the upper ones; panicle erect or almost so.
  Panicle long, loose; awns very short ... *B. unioloides* 5
  Panicle short, dense; awns about length of flowering glume ... ... *B. mollis* 6

1. **Bromus maximus,** L. *Great Brome.* Erect annual, with stiff, downy stems below the panicle and villous leaves rough on the edges; panicle rather loose with long downy branches; spikelets 6-10 cm. (2½-4 in.) long, including awns, very rough, with 6-10 divergent flowers; flowering glume lanceolate, with 7 prominent nerves and an awn twice its length; palea scarcely more than half as long as the flowering glume.

Waste and cultivated places; rare.—Oct.-Nov.—Europe; temperate Asia.

2. **B. sterilis,** L. *Barren Brome.* Annual, with stems glabrous or almost so below the panicle; leaves villous; panicle long, very loose, drooping in fruit and become purplish, with long, rough branches; spikelets 5-8 cm. (2-3 in.) long, including awns, very rough, finally drooping, with 6-8 divergent flowers; flowering glume lanceolate, with 7 prominent nerves and an awn nearly twice its length.

Roadsides; waste and cultivated places.—Oct.-Nov.—Europe; temperate Asia.

3. **B. madritensis,** L. *Madrid Brome.* Annual, with slender stems, glabrous or almost so; leaves narrow, downy or almost glabrous, rather rough; panicle becoming purplish, rather erect and dense, with short, spreading-erect branches; spikelets 3-5 cm. (1¼-2 in.) long, including awns, rough, erect, with 7-12 divergent flowers; flowering glume narrow-lanceolate, faintly 7-nerved, with a slender awn a little longer than it; palea almost as long as flowering glume. Resembles the preceding when in flower, but is smaller in all its parts.

Common on roadsides and cultivated land.—Oct.-Nov.—Mediterranean region, and as far north as the English Channel.

Bromus madritensis.

4. **B. rubens,** L. Annual, with stout, stiff, downy stems; leaves villous; panicle at first dense, finally rather loose, drooping, and purplish-brown, with downy, rather short branches; spikelets 4-6 cm. (1½-2¼ in.) long, including awns, with 5-8 divergent flowers; flowering glume swollen in

fruit, with 5 prominent nerves, the 2 next to the mid-nerve almost obsolete; awn stout, brittle, nearly twice as long as the flowering glume.

Sandy land near the coast.—Sept.—Mediterranean region.

5. **B. unioloides,** H. B. and K. *Prairie-grass.* Perennial, with stout, erect, glabrous stems; leaves flat, rough on the upper side, the sheaths of the lower ones softly villous; ligule short, torn; panicle long, loose, pyramidal, erect or slightly drooping, with long, rough, filiform branches; spikelets pale-green, very flat, oblong-lanceolate, rough, 6-8-flowered; lower empty glume 7-nerved, upper 9-nerved; flowering glume keeled, 2-toothed, 9-13 nerved, with a very short straight awn; palea about half as long; ovary with 3 little horns at summit, instead of being merely notched as in the other species of *Bromus*. *B. Schraderi*, Kunth.

Bromus unioloides.

Roadsides, pasture.—Oct.-Jan. —North and South America.

6. **B. mollis,** L. *Soft Brome.* Annual, with stems naked and almost glabrous in the upper part; leaves and sheaths softly villous; panicle light-green, oval or oblong, erect, dense after flowering, 2-10 cm. (¾-4 in.) long, with branches shorter than the spikelets, the latter villous or glabrous, with 5-11 closely overlapping flowers; lower empty glume 5-nerved, upper 7-nerved; flowering glume oboval, 7-nerved, notched, with a straight awn nearly as long.

Roadsides, pasture. — Oct.-Jan. — Europe; western Asia.

28. Briza, L.

Spikelets compressed laterally, with several spreading, closely overlapping flowers; outer glumes 2, subequal, boat-shaped, 7-9-nerved; flowering glumes membranous, shaped like the outer ones, but cordate at base; palea much smaller; grain almost circular.

Panicle simple, drooping; spikelets large, few ... ... *B. maxima* 1
Panicle compound, erect; spikelets small, numerous ... ... *B. minor* 2

1. **Briza maxima,** L. *Large Quaking-grass.* Glabrous annual, with erect stems; leaves flat, rough, with a long ligule; panicle 1-sided, with filiform branches bearing only 1-2 drooping spikelets; spikelets 15-20 mm. ($\frac{1}{2}$-$\frac{3}{4}$ in.) long, at first oval and silvery-white, then oblong and golden, containing 9-17 flowers; flowering glume downy, almost circular, 7-nerved.

Adelaide plains and hills.—Sept.-Dec.—Mediterranean region.

2. **B. minor,** L. *Lesser Quaking-grass.* Glabrous annual; ligule long, lanceolate; panicle compound, spreading-erect, with hairlike branches and pedicels bearing numerous triangular, pale-green spikelets 3-5 mm. long, 4-8-flowered; outer glumes a little longer than the contiguous flowers.

Pasture and scrubland.—Sept.-Nov.—Europe; Asia.

Briza maxima.

29. Festuca, L.

Spikelets compressed laterally, several-flowered; outer glumes 2, shorter than the flowers, lower 1-nerved, upper 3-nerved; flowering glume narrow, rounded on back, awned or not.

Outer glumes unequal; flowering glume awned.
Panicle long, arched: stem leafy to the panicle ... ... *F. Myuros* 1
Panicle short, erect; stem naked under the panicle ... ... *F. bromoides* 2
Outer glumes almost equal; flowering glume mucronate; stiff grass ... ... *F. rigida* 3

1. **Festuca Myuros,** L. *Rat's-tail Fescue.* Glabrous annual, with slender stems leafy up to the base of the panicle; leaves narrow, cylindrical-inrolled; ligule short; panicle 10-30 cm. (4-12 in.) long, spike-like, at least near the summit, sometimes compound, more or less 1-sided and usually arched; spikelets compressed, with 4-6 divergent flowers; outer glumes unequal, the lower about one-third as long as the upper; flowering glume cylindrical, glabrous, tapering

into a terminal awn rather longer than it; stamen usually 1. *Vulpia Myuros*, Gmelin.

All over the State, preferring sandy places.—Sept.-Nov.—Almost cosmopolitan.

Festuca Myuros.

2. **F. bromoides,** Sm. Resembles the preceding but has a long, naked stem below the panicle, which is 2-10 cm. ($\frac{3}{4}$-4 in.) long, and is often reduced to a mere raceme; lower empty glume about half as long as the upper, which is often as long as the contiguous flower. *Vulpia sciuroides*, Gmelin.

Same places and season as the preceding.

3. **F. rigida,** Kunth. *Hard Fescue.* Stiff, glabrous annual, with ascending stems; leaves narrow, flat or inrolled; ligule oblong, torn; panicle narrow, oblong, lanceolate, erect, 4-8 cm. ($1\frac{1}{2}$-3 in.) long, the branches clothed with spikelets almost to the base; spikelets linear-oblong, with 6-10 rather loose flowers; outer glumes almost equal; flowering glume blunt, with a very small mucro; stamens 3. *Poa rigida*, L.; *Scleropoa rigida*, Grisebach.

Festuca rigida.

Waste places.—Sept.-Nov.—Europe; western Asia.

30. Dactylis, L.

(Greek *daktylos*, a finger; alluding to the shape of the panicle.)

1. **Dactylis glomerata,** L. *Cock's-foot-grass.* Tall perennial, with a rootstock forming tufts; leaves long, flat, rough; ligule oblong, torn; panicle long, narrow except when in flower, the lower branches naked below and more or less spreading; spikelets compressed, 3-5-flowered, arranged in dense 1-sided clusters; outer glumes 2, subequal, membranous, acute; flowering glume with a ciliate

keel, 2-toothed, very shortly awned.

Pasture and orchards, chiefly in the hills. — Nov.-Dec. — Europe; temperate Asia.

31. Poa, L.

(Greek *poa*, grass.)

1. **Poa annua,** L. *Annual Meadow-grass.* Glabrous annual, with weak ascending stems; leaves bright-green, soft, flat; ligule lanceolate; panicle oval, loose, the slender spreading branches naked towards the base; spikelets compressed, oval-oblong, distant, usually 3-5-flowered; outer glumes 2, unequal, acute, scarcely half the length of the spikelet, the lower 1-nerved, the upper 3-nerved; flowering glume keeled, with 5 conspicuous nerves, silky-ciliate towards the base.

Poa annua.

Dactylis glomerata.

Cultivated and waste places. —June-Sept., and often flowering at other times of the year also.—Cosmopolitan.

ADDITIONS AND CORRECTIONS.

Page 12.—Instead of "A. P. Candolle," read "A. P. de Candolle."

Page 45.—Instead of "Albizzia 9," read "Albizzia 10."

Page 47.—**C. linifolius.** Instead of "upper one trifid," read "lower one trifid."

Page 97.—Instead of **"Hedypnois polymorpha,** DC. (including *H. cretica*, Willd.)," read **"Hedypnois cretica,** Willd.", Willdenow's name being of earlier date than De Candolle's.

Page 127.—After "Dischisma, Choisy," add:—

(Greek *dis*, twice, *skhisma*, a split; alluding to the shape of the calyx.)

Page 152.—After the description of *Agave americana* add:—

2. Narcissus, L.

1. **Narcissus Tazetta,** L. *Polyanthus Narcissus.* Bulb ovoid, large; leaves 3-6, broad-linear, almost flat, about as long as the compressed, 2-edged stem; flowers 4-13, scented, in a terminal umbel rising from a membranous, 1-valved spathe; perianth with 6 white, spreading segments nearly as long as the slender tube; crown *(corona)* cup-shaped, yellow, subentire, about one-third as long as the segments; stamens inserted in the perianth-tube and not protruding beyond the crown.

Pasture near Golden Grove.—Aug.-Sept.—Mediterranean region. A garden variety has the crown white.

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